Issue 83

PS

1959 Series

THE PREVENTIVE MAINTENANCE MONTHLY

"Where'd you file them 1546's for boots?"

UER YOUR

When you've got a complaint about the tools or tool sets you are issued, let the tech services know. Send in a UER (DA Form 468.)

Lots of guys gripe, "This wrench is too weak," or "That wrench is too thick."

Or, "My tool set has too much useless junk in it." Or, "This set needs wrench A and Screwdriver B . . . why don't we get 'em?"

You'll never get anywhere barking in the wind.

Instead, whip out a UER and fill it out. On a single tool or a whole tool set.

Tell the tech service wheels if the tool's no good for the job. Or if another one's needed to do the job. Or if your tool set has things in it that you never need. Or if your set ought to have other tools you do need.

Send it in to the chief of the technical service that provides the tool or the tool set.

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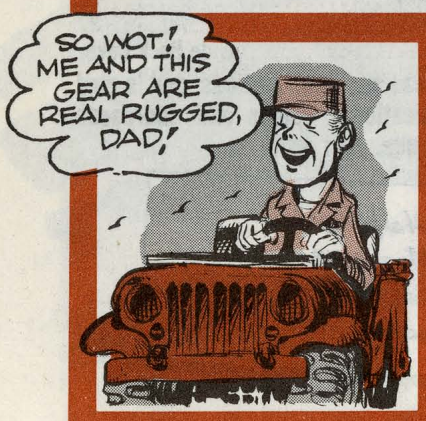
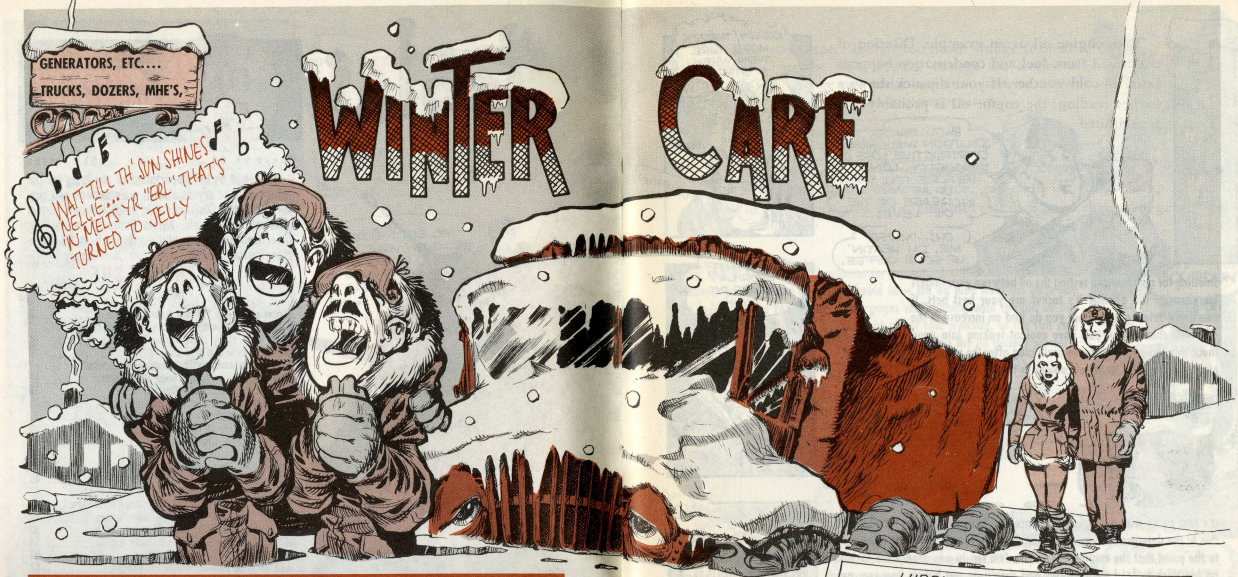
All your equipment takes extra care and protection in cold weather.

Without proper maintenance, equipment just won't work right when the mercury's low.





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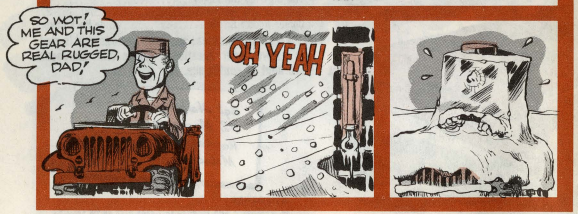

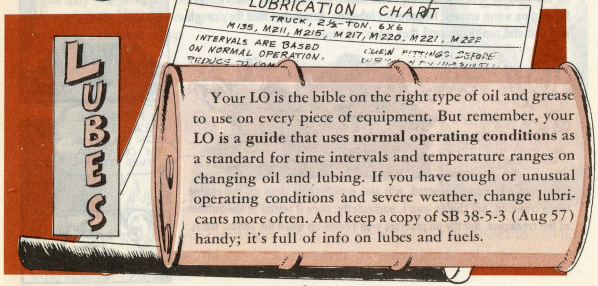

Your LO is the bible on the right type of oil and grease to use on every piece of equipment. But remember, your LO is a guide that uses **normal operating conditions** as a standard for time intervals and temperature ranges on changing oil and lubing. If you have tough or unusual operating conditions and severe weather, change lubricants more often. And keep a copy of SB 38-5-3 (Aug 57) handy; it's full of info on lubes and fuels.

LUBRICATION CHART

TRUCK, 2½-TON, 6X6
M135, M211, M215, M217, M220, M221, M222

INTERVALS ARE BASED
ON NORMAL OPERATION,

CLEAN FITTINGS BEFORE

LUBES

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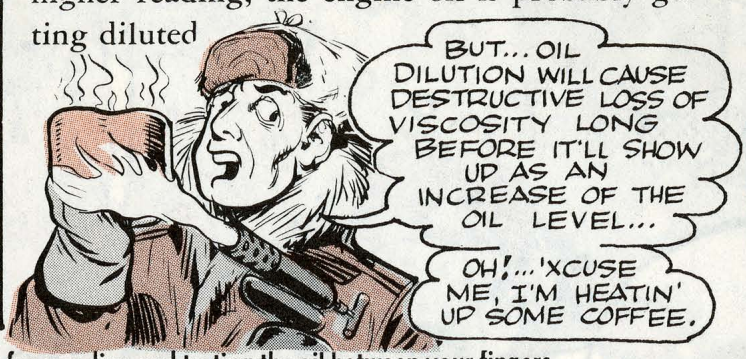
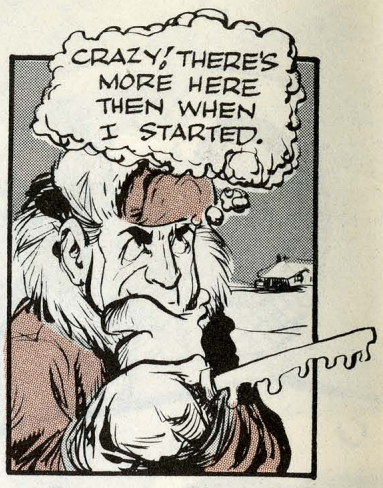
Take engine oil as an example. Dilution of engine oil from fuel and condensation happens faster in cold weather. If your dipstick shows a higher reading, the engine oil is probably getting diluted



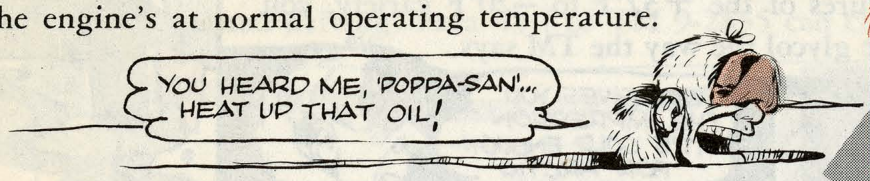


Smelling for gasoline and testing the oil between your fingers for viscosity (no good if it's tacky) are your best bets. If you don't detect gasoline but you do find an increase in the oil level, chances are you have coolant leaking into your crankcase. To check this, drop the crankcase drain plug after the vehicle's stood idle overnight, and look for traces of coolant or sludge.

It's real tricky with detergent oils, since they'll accept quite a bit of water due to the detergent action. Moreover, if sludge ever forms in the crankcase to the point that the engine labors, there's a ten-to-one chance the oil will be too thick to feed the bearings and they'll go out before you ever get the engine warm enough to know it's laboring. Remember that they cough and spit and run rough until they warm up some.

Plain cold oil, uncontaminated, will give a noticeable drag on the engine while cranking, but sludge won't, particularly, since it settles to the bottom of the crankcase. But the oil pressure won't come up when the engine starts.

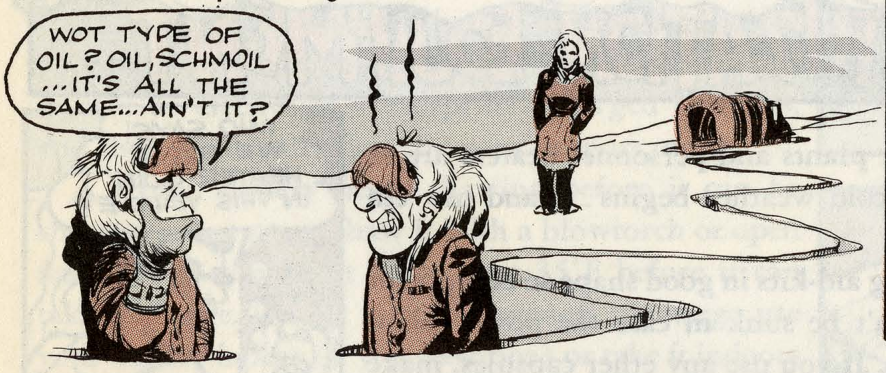
Any time you suspect there's too much sludge formed in the crankcase or the oil's diluted, change the engine oil. Whenever you change oil, make sure it's warm or hot and the engine's at normal operating temperature.



Gotta keep checking the oil level often, especially if you're using subzero grade oil in your crankcases. An engine uses this stuff faster than other grade oils.

Any special Engineer or Quartermaster equipment still using direct tubing-connect bourdon-tube oil-gages should have the oil bled from the gage line by loosening the connection at the gages and running until the old oil has been replaced with OES or similar light oil for cold weather, so the stiff cold oil in the gage line won't prevent the gage showing the oil gallery pressure.

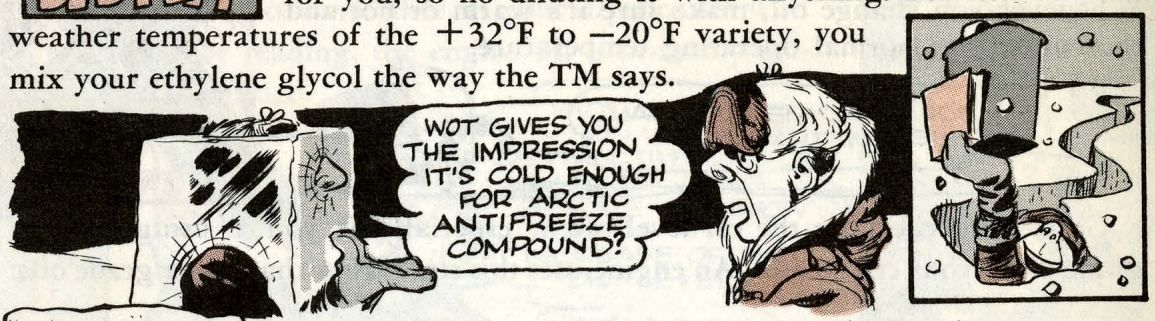
Don't mix different types or grades of engine and gear oil. When you add, make sure you're adding the same stuff that's already there. When you change, use the right type and grade of lubricant for the temperature range and make a complete change.



The same goes for your accessories that also use engine oil. For instance, an oil bath type air cleaner would use OES whenever the same grade oil is put in your equipment's crankcase.

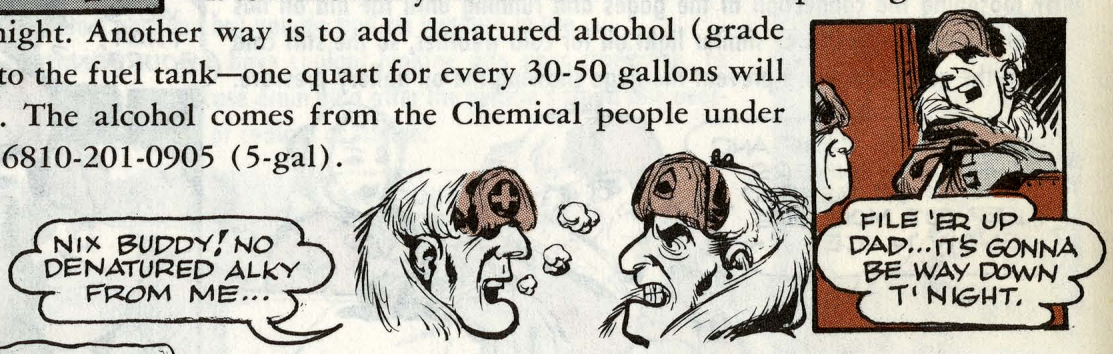
COOLING SYSTEM

Arctic antifreeze compound . . . FSN 6850-174-1806 . . . goes in the system for sub-zero weather. It's already mixed for you, so no diluting it with **anything.** For normal cold weather temperatures of the +32°F to −20°F variety, you mix your ethylene glycol the way the TM says.



FUEL SYSTEM

If you're operating in temperatures that're always near or below zero, there's a good chance of fuel lines freezing because of condensation in the fuel tank. One way to stop this is to make sure your fuel tank is full before parking the vehicle overnight. Another way is to add denatured alcohol (grade III) to the fuel tank—one quart for every 30-50 gallons will do it. The alcohol comes from the Chemical people under FSN 6810-201-0905 (5-gal).



POWER TRAIN

Extreme cold means subzero gear oil (GOS) for all your gearing—such as conventional type transmissions, transfer cases and differentials. But if the LO reads engine oil, then use OES . . . which also goes into automatic type transmissions.

WINTERIZATION EQUIPMENT

Make sure power plants and personnel heaters are in good shape before cold weather begins . . . and use 'em only when needed.

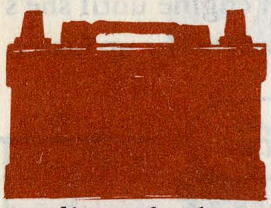
Keep cold-starting aid-kits in good shape so equipment that needs 'em won't be sunk in case the power plant heater breaks down. If you use any ether capsules, make sure all pieces of the plastic capsule are removed after the engine gets started.

A little decrease in air pressure helps tires hold up better in real cold weather. When the mercury drops below 0 degrees F, drop tire air pressure 10 to 15 per cent below that usually recommended for normal driving. Para 43 i of TM 9-2855 can clue you in on this.

A tire needs to be warmed up just like an engine—with a little slow running before hitting normal speed. That takes out the flat spot tires may get on the bottom when a vehicle's parked for a while.

Don't let air out of a tire during or just after operating. Wait till she's cold.

Keep valve cores in tight and valve caps secure to keep snow and ice away from the core.

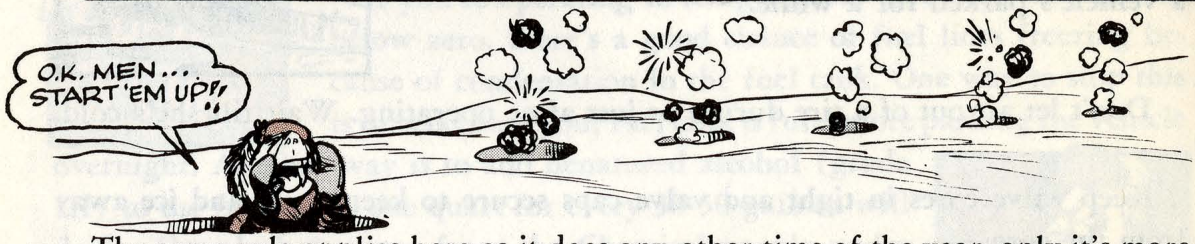


Battery specific gravity has to be checked often in cold weather. Remember, whatever reading you get on your hydrometer has to be corrected to 80 degrees F. (Check para 23a(1) of the same TM.) In other words, the specific gravity reading of a battery changes as the temperature changes. In your hydrometer, there's a thermometer that records the temperature of the electrolyte. For every 10 degrees below 80 degrees this thermometer reads, subtract .004 from the reading your hydrometer gives you.

Add water only when the battery is charging, before a long trip or when it's in a warm place. You never put in acid or electrolyte — except dry charged batteries, and then it's usually done by your support outfit.

A frozen battery needs thawing before it can be charged — but never thaw it with a blowtorch or open flame. A battery must be at least 35°F before it can take a charge. To get it warm enough to charge use your battery heater (if you have one) or take it indoors overnight. Keep batteries fully charged (1.275 to 1.300 specific gravity corrected to a temperature of 80°F). A discharged battery (1.130) freezes at 10°F.

STARTING AND WARMING UP ENGINES



The same rule applies here as it does any other time of the year, only it's more important: Unless it's really necessary, don't put a load on an engine until she's warmed up to operating temperature. Don't race an engine to warm her up faster.

Take it easy on your starter motors by shortening engagement of the starter to 10 or 15 second spurts—with longer waiting periods between cranking. Cold engine oil makes an extra drag, increasing the load on the starter and batteries.

TRY TO KEEP AWAY FROM STARTING ENGINES OFTEN.

If you're on a stop-and-go mission it's best to let it idle during stops, but do it at high idle and check the temp gage to be sure the coolant's at operating temperature . . . or isn't overheating . . . before starting to drive the vehicle.

ON ENGINE GENERATOR SETS . . . INCREASE YOUR WARM-UP PERIOD BY RUNNING GENERATOR AT REDUCED SPEED FOR 15 TO 30 MINUTES AFTER ENGINE REACHES OPERATING TEMPERATURE. THE HEAT BUILDUP WILL EVAPORATE MOST OF THE CONDENSATION IN THE GENERATOR WINDINGS AND OTHER ELECTRICAL COMPONENTS BEFORE YOU PUT EQUIPMENT UNDER LOAD.

OTHER TIPS

When you're going to operate a vehicle that's been shut down and parked out in cold weather for a time, start out slow. The engine isn't the only thing that needs warming up. The transmission, chassis, and components need some exercise before they get a full load.

When the vehicle isn't being used for extended periods, you might want to remove the crankcase oil while it's hot—and store it in a warm place. If you do, leave a note on the ignition switch.

Right after shutting down for the day, clean snow, slush, and dirt away from wheels, tracks, axles, and components so it won't freeze up solid overnight.

If there's no dry ground to park on overnight, use dunnage. Parking on brush or logs will keep a vehicle from freezing to the ground.

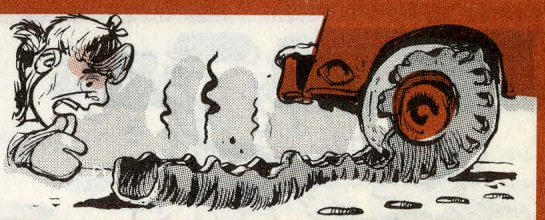
In case the tracks or tires do get frozen to the ground, easy does it in breaking loose.

Trying to jerk the tires or tracks loose by operating the vehicles will bring troubles.

And so will building a fire around 'em on the frozen ground to thaw things out.

Best thing to do is to rock the vehicle easy-like (do not jerk) until it breaks loose.

A jerk or application of full power could mean torn tires, broken tracks, damage to final drives or other parts of the power train.

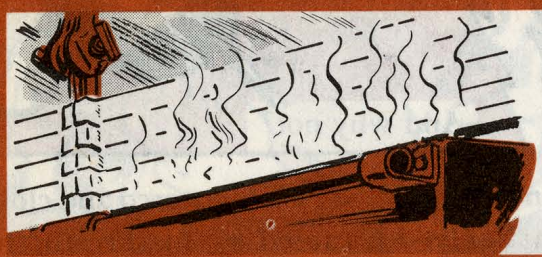


When the mercury's around or below zero, take care with a windshield that's coated with ice, snow or frost.

Don't turn hot air from the defroster directly on a cold windshield.

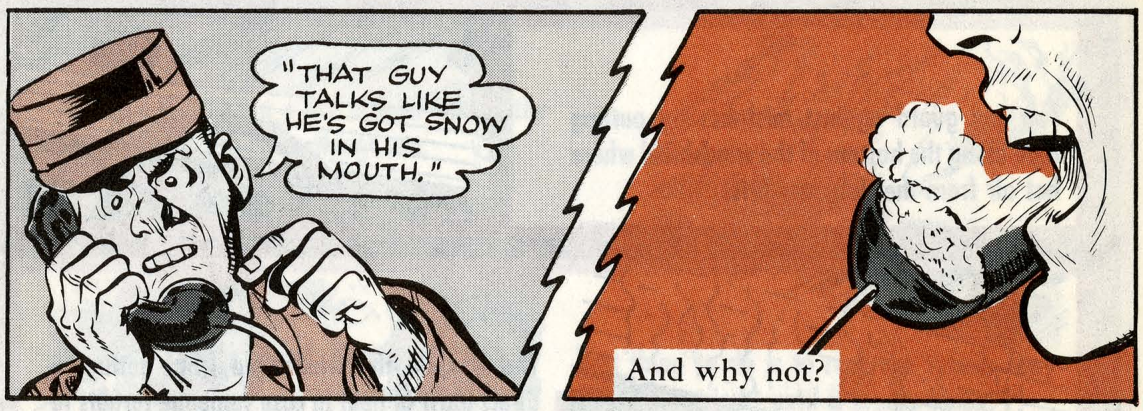
Warm the cab up first and then turn hot air on the frozen windshield gradually.

You can guard against mistakes by putting tape along the bottom of the windshield where hot air from the defroster hits.

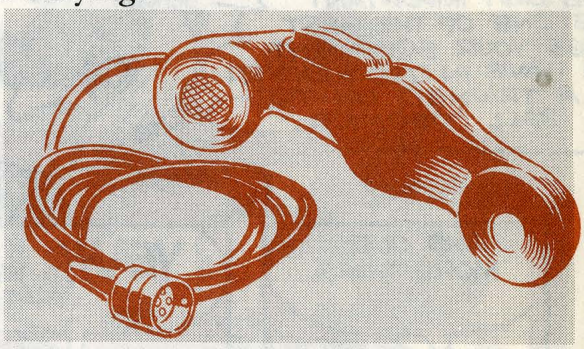


That'll keep the windshield from getting a direct blast of heat in case someone forgets to turn the defroster off while the cab's getting warmed up.

WOULDN'T THAT FROST YA!



After all, the microphone on his Handset H-33 ( )/PT is covered and clogged with the white stuff. Or—more than likely—ice caused by his breath. It's a wonder anybody can make out what he's saying.



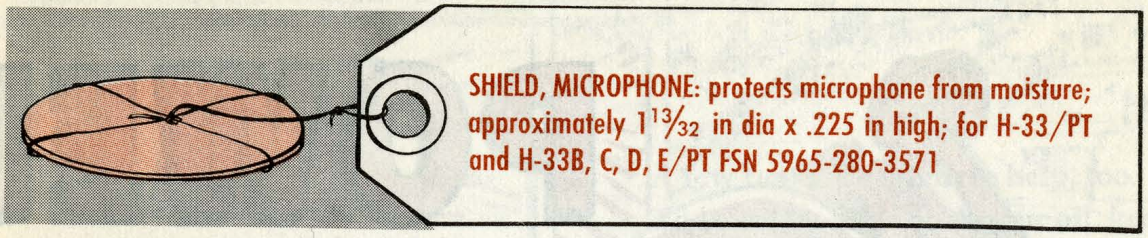
His snow-in-the-mouth speech comes from a combination of nature's oldest laws. First, moisture forms on a surface when somebody talks close to it. Second, moisture freezes on a surface when the temperature drops down below the freezing point.

And wouldn't that frost your chatter!

Trouble is, those H-33's have a habit of losing their frost shields one way or another, or sometimes a shield will be punctured.

So the first thing to do before you head for the frozen fields is to see that the handset with your radio gear has got its frost shield... and that it's free of holes.

If not, take 30 seconds to slip one on. Maybe 40 seconds if your hands are cold. Its name:



And what if you're already out in the cold, cold fields and find you're frosted for lack of a shield? Well, any thin piece of plastic—cut to size a shade larger than the microphone cap—will cover the subject. Pop it into place and it'll stay put.

A handy source of plastic, by the way, is the stuff used to wrap dry batteries in. Good for shielding and usually not far away.

SPREAD 'EM EASY

Usually the first thing a man does with a pair of headphones is to grab them by the ears and spread 'em. Naturally. How else can anybody get them ready for action?

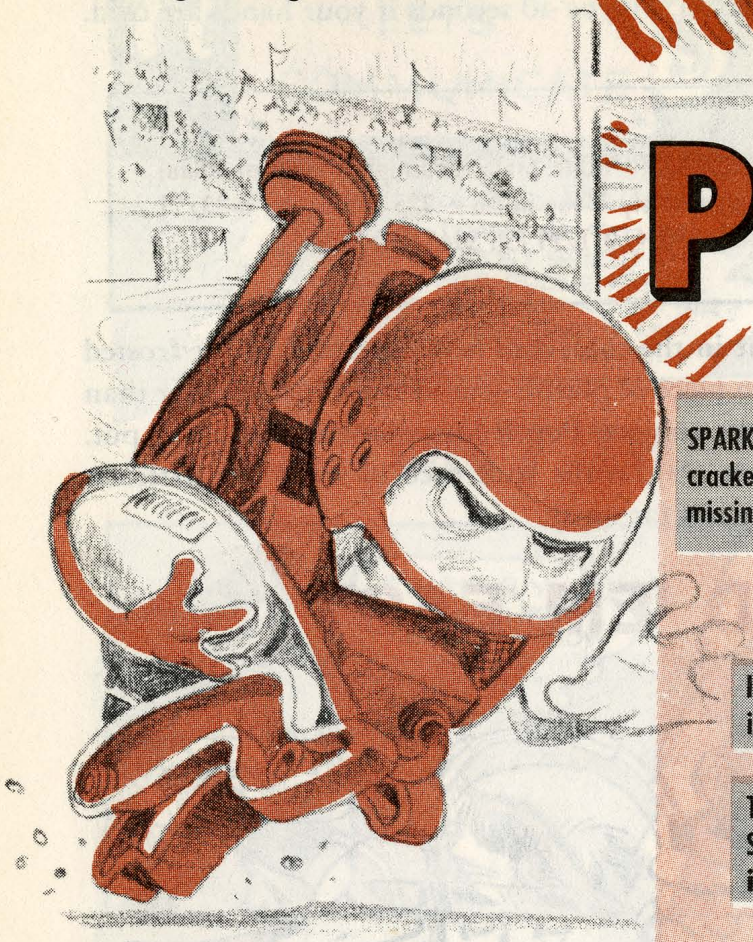
Trouble is, that strains the thin connection between the receiver element and headband. And that strain soon enough leads to a break. The only cure for it, of course, is a whole new receiver element—which may not be handy.

So spare the strain of the spread. Instead of grabbin' just the earphones next time, wrap your loving paws around both headband **and** earphones—and then spread.

It's a little thing to remember, but a connection that cracks at a crucial time means trouble. The right kind of a spread can spare that.

Calling the Signals for a . . .

POWER



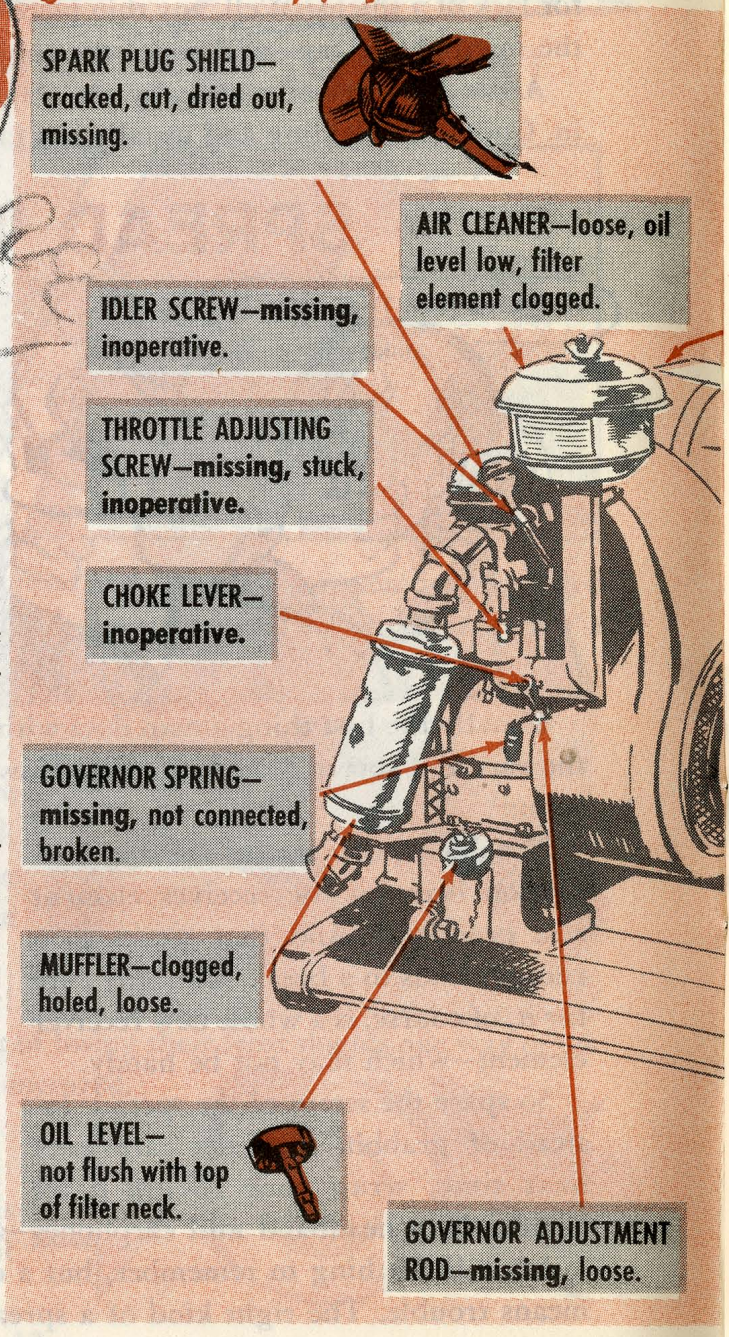
POWER, the man says.

So give him power...from a little unit that squeezes out the juice for your field telephone and radio assemblies with plenty of current to spare.

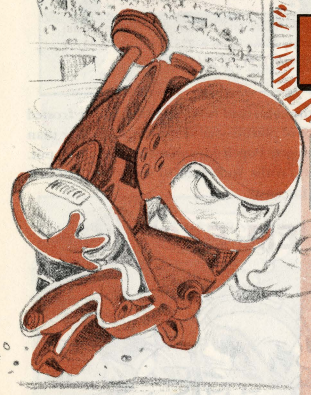
Old reliable PE-75 has been puttin' out the volts for lo these many years—with hardly a change in her schematic. The reason is pretty simple: It's pretty tough to improve on the old girl.

Still, she needs a touch or two of preventive maintenance now and then so's to put out when the call comes down the line for power.

So how about sticking this be-your-own-inspector check list up your sleeve for ready reference next time your PE-75 is ready for PM:



POWER PLAY



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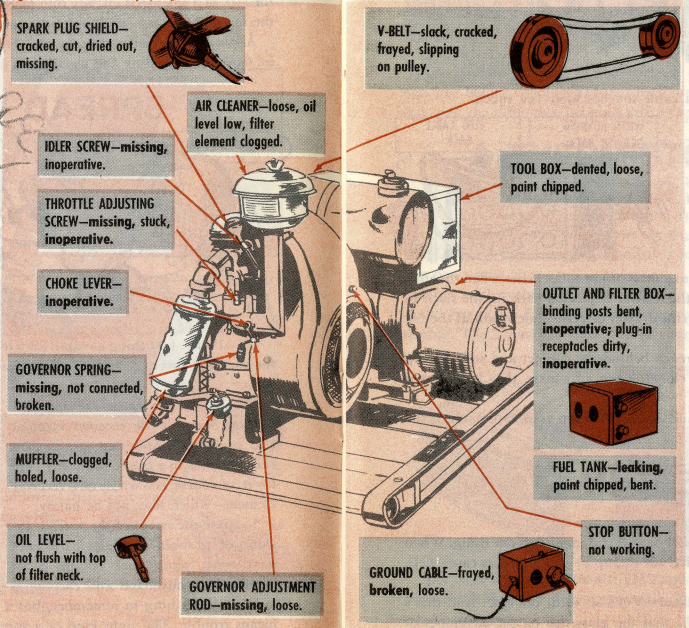


A few fuel facts ought to help, too.

To be on the level with your oil, keep the level right flush with the top of the filler neck. That's a pretty sensitive reading, so bend an eyeball to be sure you're on the right level.

Same story with the gasoline. Satisfy yourself that there's enough fuel on hand (better still, in the tank), and when you're filling up, bring the level up to the bottom of the filler neck—like with the oil.

Blow through the air vent in the filler cap to keep it clear, and always check the filler bowl to see how much, if any, gook has crept into your gasoline.

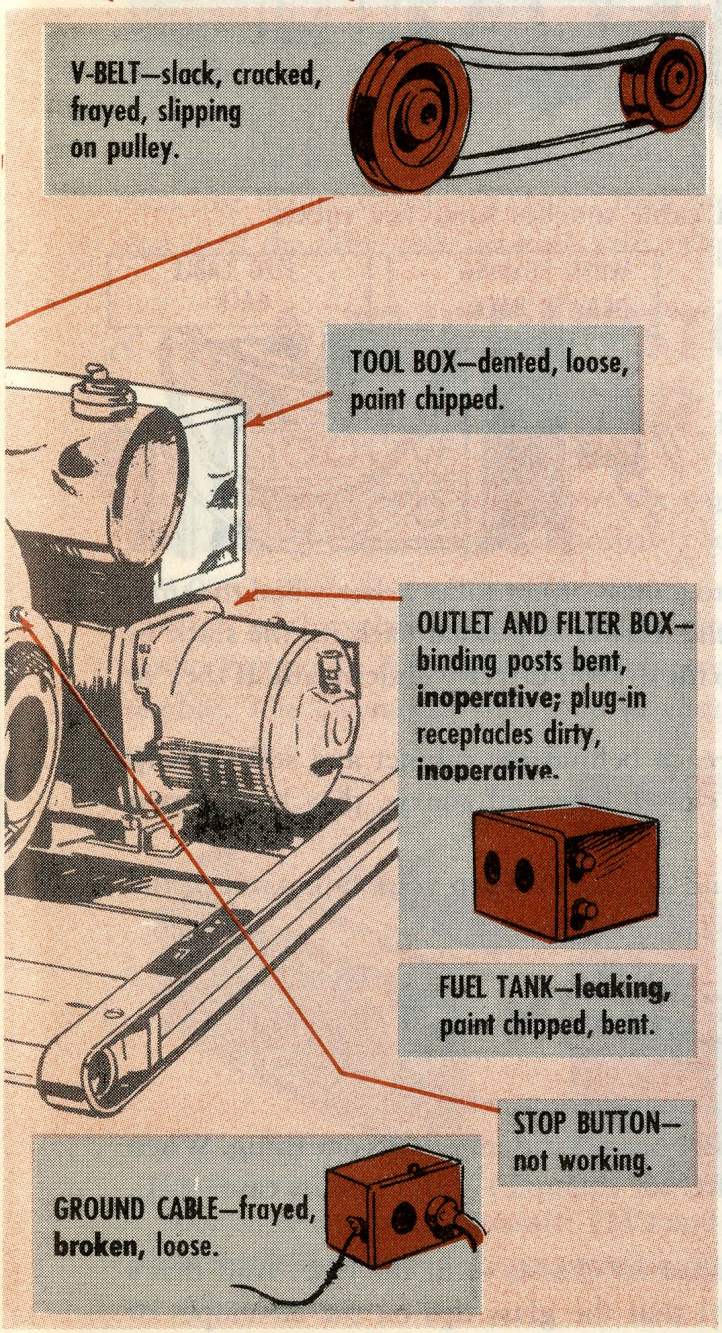
If you're dealing with a later model —PE-75-AF—then your power unit is rigged for remote fuel supply. Check that auxiliary fuel connection elbow to see that it's bent the right way for the kind of flow you want.

The Shut-Off valve can be in one of three positions: Up (for OFF); Down (for engine tank); and pointing in (for outside supply).

Feed these check points a steady rate of preventive maintenance and you can rest easy that your PE-75 will pile up the current when the radios and telephones—and the CO—wants them front and center.

PS—Major deficiencies (which keep the unit out of action or unsafe to operate) are in heavy type.

PLAY



A few fuel facts ought to help, too.

To be on the level with your oil, keep the level right flush with the top of the filler neck. That's a pretty sensitive reading, so bend an eyeball to be sure you're on the right level.

Same story with the gasoline. Satisfy yourself that there's enough fuel on hand (better still, in the tank), and when you're filling up, bring the level up to the bottom of the filler neck—like with the oil.

Blow through the air vent in the filler cap to keep it clear, and always check the filler bowl to see how much, if any, gook has crept into your gasoline.

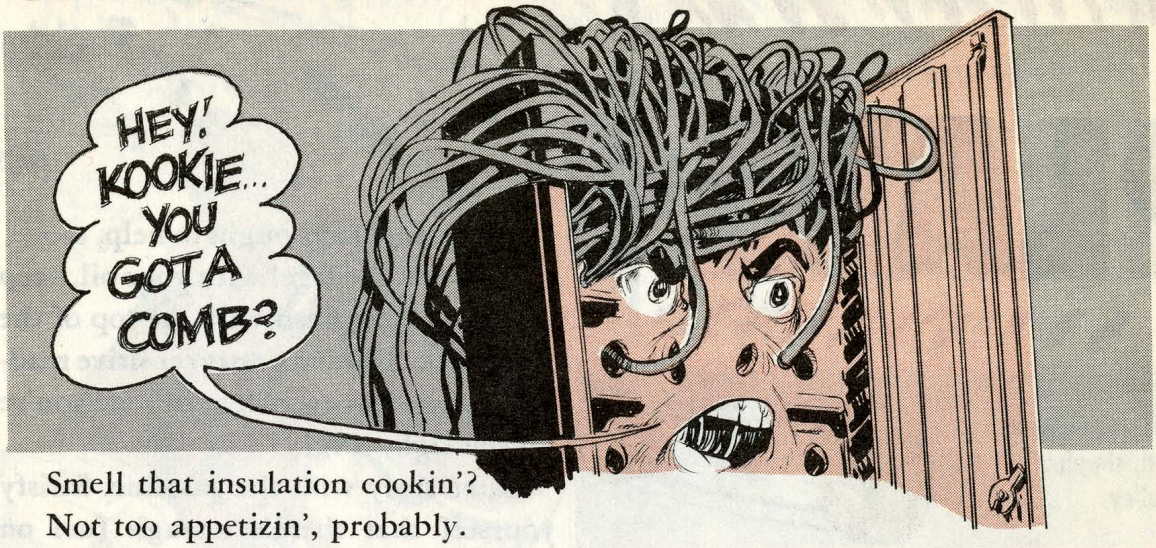
If you're dealing with a later model —PE-75-AF—then your power unit is rigged for remote fuel supply. Check that auxiliary fuel connection elbow to see that it's bent the right way for the kind of flow you want.

The Shut-Off valve can be in one of three positions: Up (for OFF); Down (for engine tank); and pointing in (for outside supply).

Feed these check points a steady rate of preventive maintenance and you can rest easy that your PE-75 will pile up the current when the radios and telephones—and the CO—wants them front and center.

PS—Major deficiencies (which keep the unit out of action or unsafe to operate) are in heavy type.

CARE AND FEEDING OF CABLES

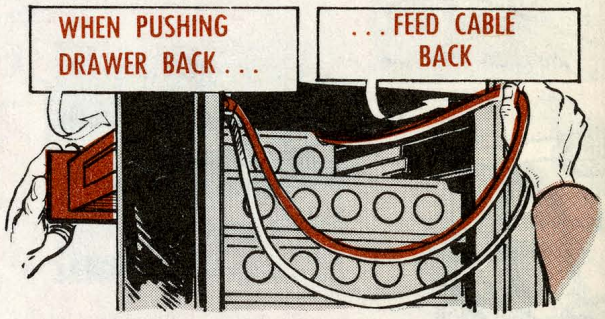


Smell that insulation cookin'?

Not too appetizin', probably.

But it'll sizzle and spit every time a cable touches some hot tubes.

Which is exactly what happens when the drawers are open on your telegraph-terminal equipment—AN/FGC-3, -7, and -8. Naturally the cables connecting the drawers need a certain amount of slack so's a man can pull the drawer all the way out for a routine check, or whatever the reason.



The danger of dipping the cables into a mess of hot tubes arises when the time comes to close the drawer. Because as the drawer is pushed back in, the slack in the cables causes them to sag down into the drawer directly underneath. If they're trapped there, they'll cook.

But those cables won't sag if you reach behind the cabinet and sort of help "feed" them back until the drawer is closed. Then, of course, they hang down free behind the drawers.

A simple enough recipe to follow, and one that'll keep your cables out of the stew.

EASE IT IN

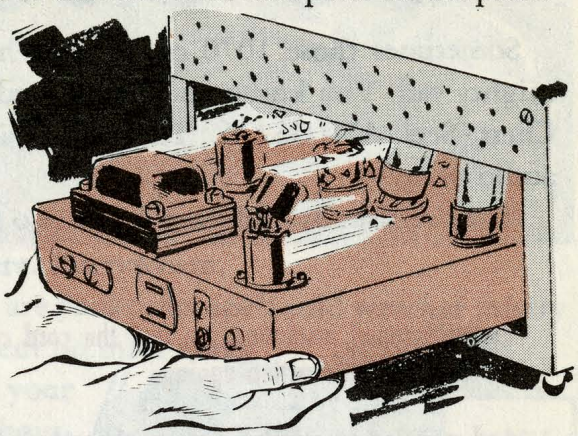
A nice tight fit is OK—depending on what fits into what.

When Connie slips into her latest tailor-made fatigues—that's one thing. When a radio chassis (an RT-68 or RT-70/GRC for example) slides into its case—well, that's another.

'Cause the radio can't wiggle or adjust its chassis to fit the case. And that's been causing trouble. The fit is so tight that the glass tips on the envelopes of

some tubes are snipped off when the chassis is slid in or out.

Another thing, too. Some fits are sooooo tight that parts of the metal chassis frame have been scraping the inside surface of the case. And that peels off the paint and sometimes cuts into the case itself to produce some fine, dangerous, metal filings.



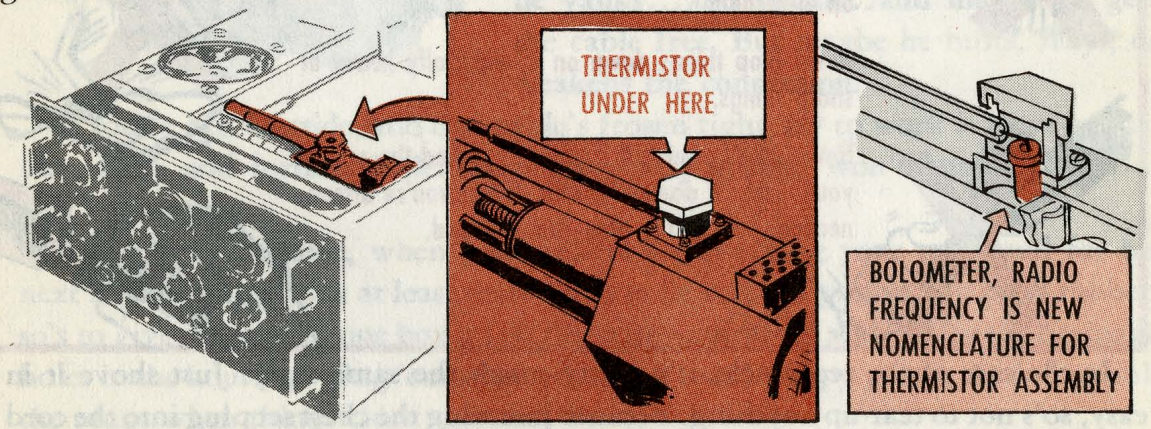
No matter how you slice it, though, it's a tight fit. The technique that most savvy signalers use is "slow and gentle." Take that extra second or three to ease the chassis in and out—especially if you hear or feel scraping sounds or vibrations.

Also, you might want to double-check those tubes, capacitors, etc., for tightness just before slipping a chassis back into its case. Seating them good and snug can spell the difference between safe clearance or getting clipped.

A THERMISTOR BY ANY OTHER NAME

Comes the day some guy throws the words "Bolometer, Radio Frequency" at you Corporal guys and you'll probably set to scratching your heads. That is, if you don't read on.

Keep your eyeballs moving along, tho, and you'll find out that Bolometer, Radio Frequency is the new nomenclature for what you know as Thermistor Assembly. The thermistor shows up in your SG-99/MSM-4 and SG-122/U signal generators.



So...as new supply manuals, TM's and other pubs roll off the printing presses, don't think somebody left out mention of thermistor by mistake. Look under "B" —for bolometer.

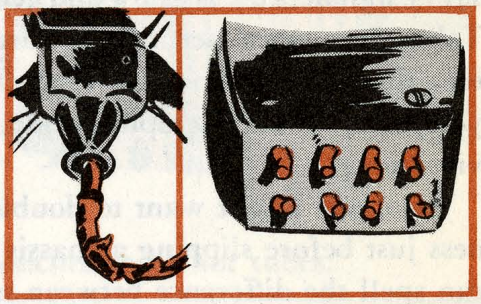
Cord Capers

Sometimes those 1070 cords come home for maintenance and repair looking mighty sad. You know, the 5-foot cords you tank crewmen use to hook up your Chest Sets AN/GSA-6. The ones with the 8-contact receptacle and a 10-pin audio plug.

They're usually suffering from two special kinds of misery:

Badly chopped insulation (so bad the cord can't be sent back into action again.)

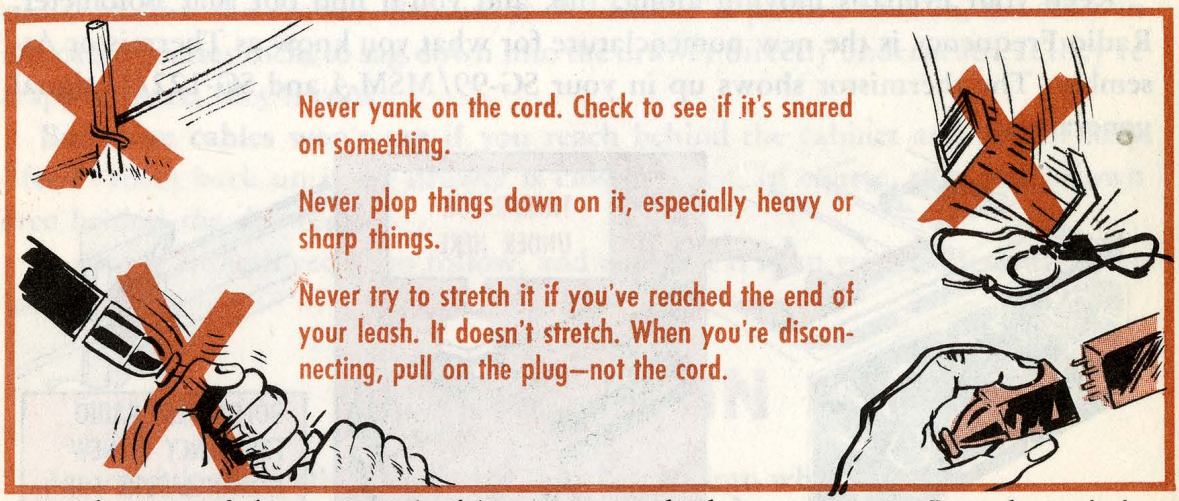
And mangled receptacles that can't receptacle any more.



Heard tell about one tanker who was standing on the rear deck of his M48—with his chest set hooked up—and this hand reaches up from inside the tank and slams the hatch shut. So what happens to the cord? Chop! And you can count at least 97 other ways those cords can get nicked, cut, scraped, etc., inside and out-outside a vehicle.

As for the receptacle, one or two of the eight contacts get worked loose and before you know it—it's jammed and useless.

The cure? A little care. The simplest sort of preventive maintenance. Like:



Never yank on the cord. Check to see if it's snared on something.

Never plop things down on it, especially heavy or sharp things.

Never try to stretch it if you've reached the end of your leash. It doesn't stretch. When you're disconnecting, pull on the plug—not the cord.

In the case of the receptacle, it's pretty much the same story. Just shove it in easy, so's not to tear up anything. Because jamming the chest set plug into the cord receptacle fast will soon loosen the contacts inside. When that happens, you're out of business as far as that cord is concerned, and only a replacement will get you back in touch.

THE YANKS ARE COMING

They're all over. Over here. Over there. Everywhere.

But not the right kind of yanks. These are yanks that spell cold weather misery for interphone communications equipment on most tanks.

Check the rear of your vehicle, where your external interphone box rides. Inside the housing, as many a tanker and infantryman knows, nestles the auxiliary interphone equipment (AN/VIA-1) that lets them what's outside talk to their inside friends when the tank's got serious business.

In cold weather, when the steel buggy has been splashing across streams and through wet country (not to mention snow, sleet, hail and all the rest), the RL-149 reel gets iced up.

Specially when the box suffers from worn, leaky gaskets or the drainage holes haven't been plugged.

And that's when the yanks start coming. Somebody on the outside wants to talk to somebody on the inside and he starts yanking at a frozen cable so's to get the handset free. And he yanks...and yanks...and maybe he gets the cable free. But maybe he busts, frays, or weakens the connection.

If you're Mr. Outside, and that cable's frozen tight, try to work it loose gentle-like. Back and forth a little. Even some easy pulling won't hurt, either. But that's all.

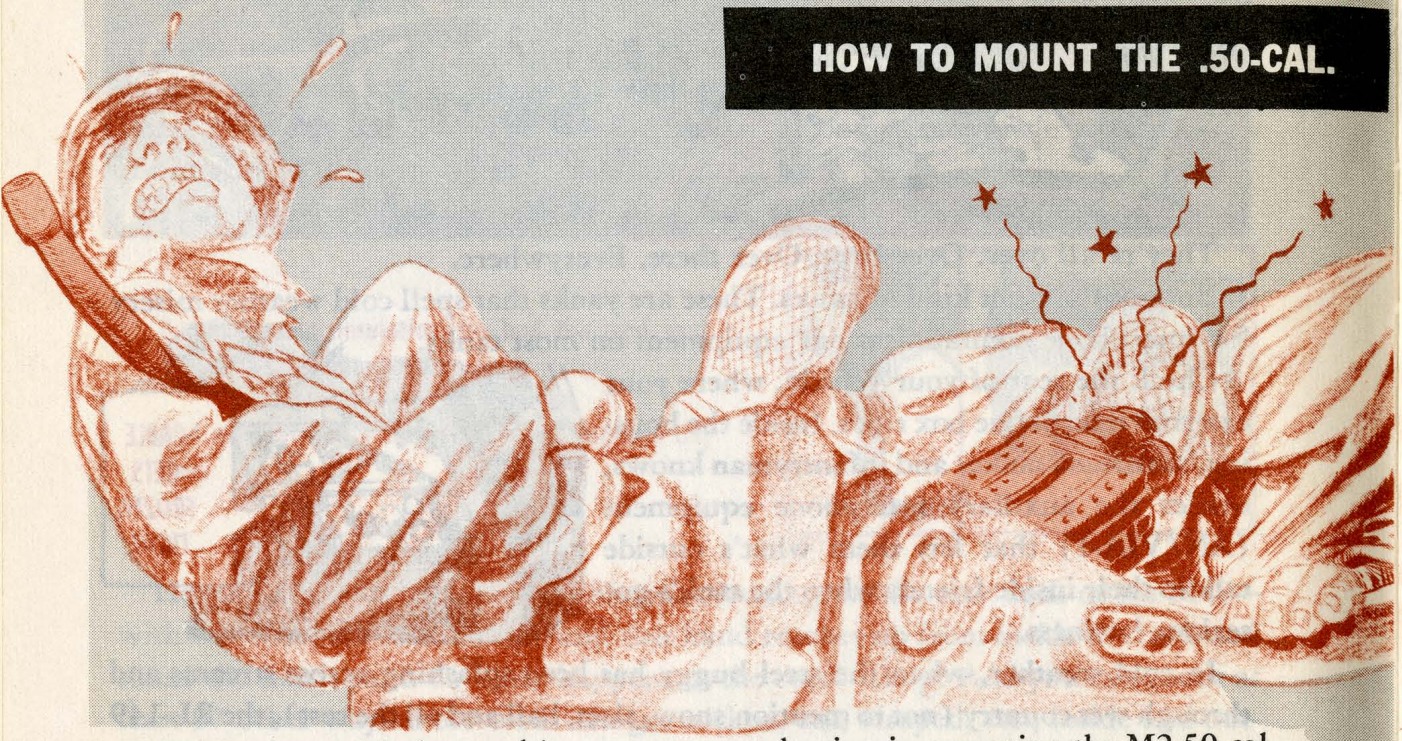
If you're Mr. Inside, when you tankers are checking your steel stud for his next frigid outing, look at least three times to be sure the gaskets are good rubber, so's to give the interphone box a 100 per cent waterproof seal. As for the drainage holes in the housing—plug 'em when you expect real sloppy going. And then pull the plugs when things clear up.

A quick before-operations check for these little items will go a long way toward keeping the phone circuit open to the outside when they're needed the most some frigid, icy day or night.

SOME SAID IT COULDN'T BE DONE,
BUT WITH THIS KNOW-HOW—

YOU CAN

HOW TO MOUNT THE .50-CAL.

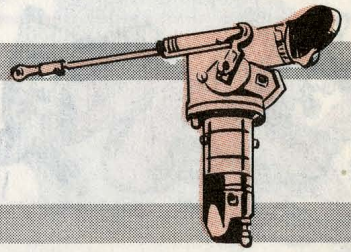


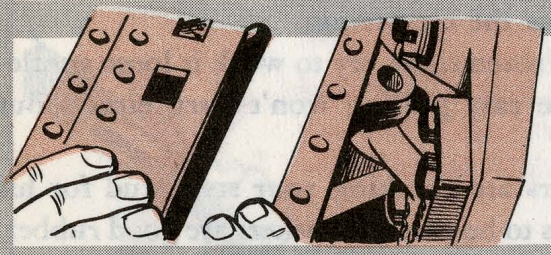
What gives with the trouble some guys are having in mounting the M2 50-cal machine gun in the M13 cupola on their M59 APC or M84 SP 4.2 mortar?

Setting the gun up in your cupola is simple as ABC, once you know a few tricks of the trade. Just don't take any short cuts or you'll end up on the short end of things.

To get the gun mounted easy-like . . .

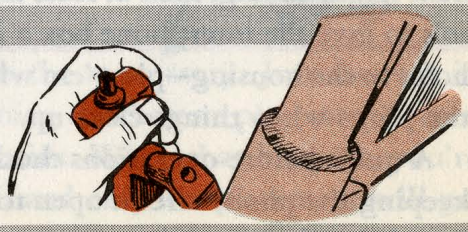
First . . . remove the M28 sight.





Second . . . crank up the elevation to about 45° and push the barrel of the gun up through the gun port (front gun support). At the same time, guide the rear mounting lugs of the gun over the rear gun support bracket.

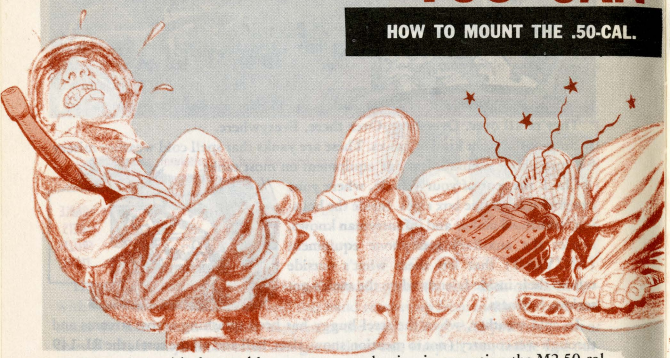
Third . . . with the gun in this position, it'll have to be supported. You do this with your right hand and at the same time turn the elevating handle with your left hand until the gun is depressed to "0" elevation.



SOME SAID IT COULDN'T BE DONE, BUT WITH THIS KNOW-HOW—

YOU CAN DO IT!!

HOW TO MOUNT THE .50-CAL. MG IN THE M13 CUPOLA



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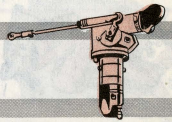

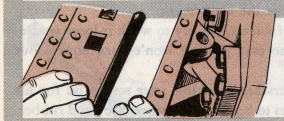

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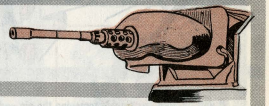
Fourth . . . when the gun is level, it'll stay up without help. This leaves both hands free to work so you can line up the bracket holes with those in the mounting lugs.



With your left hand, reach over the gun and pick up the pin in your right hand and pass it along to your left hand. Now 'ol lefty can pin those lugs down like they should be.

Could be that you'll find the pin is kind of a stubborn cuss and doesn't want to slip into place. OK, just wiggle the receiver. Try the left corner first—using the right hand because the left is still pushing the pin through the holes. This ought to do the trick.

DO IT!!

MG IN THE M13 CUPOLA

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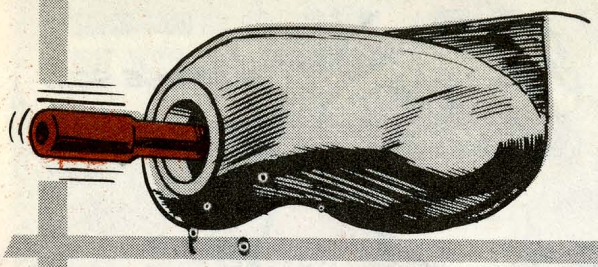
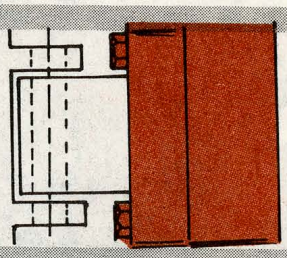
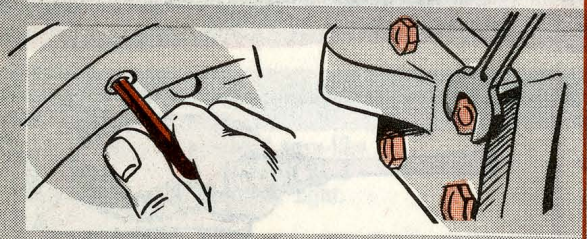


Loosen the two No. 10 hex-socket setscrews in the gun port so's you can move it.
Take off the lockwire and loosen the four 3/8-in hex-head capscrews holding the rear gun support bracket to the cradle assembly.

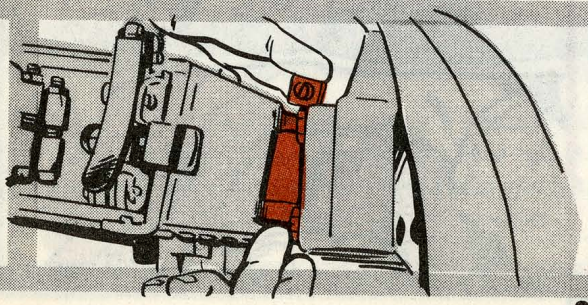


Before you do anything else, now's a good time to scribe an alining mark on the gun port and cupola cradle to save you the trouble of doing the same job again next week, next month or next year.



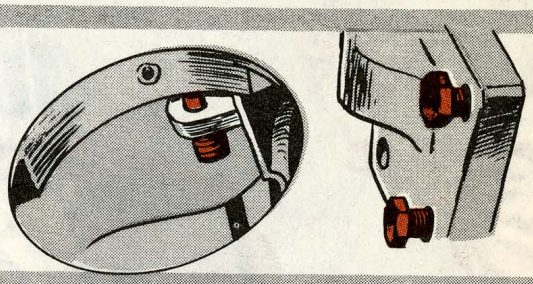
If you run into any trouble removing the pin and gun, here're some sure-fire deals.

First, level the gun to "0" degrees elevation.



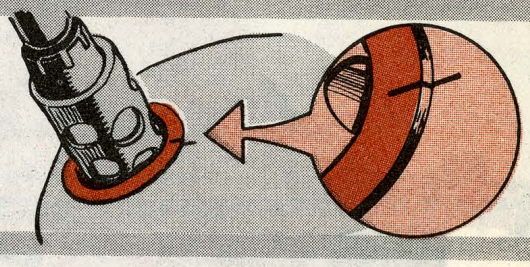
Then again . . . maybe you'll run into a situation where you find the pin just won't go into place—no matter how you fight it. It takes a little work, but it can be done. Here's how—

Remove the gun.

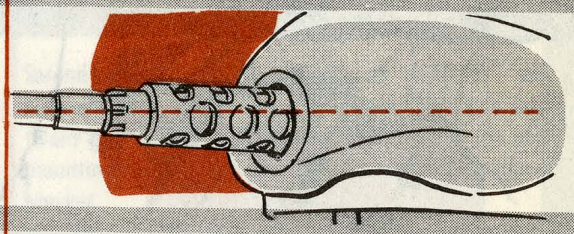


Put the gun back in and as you do, rotate the port and jiggle the bracket until the holes in the mounting lugs line up with the holes in the bracket.

Install the mounting pin and tighten the four capscrews that hold the mounting bracket.



OK . . . now you can take out the mounting pin and machine gun so you can wrap up things by tightening the two setscrews in the gun port and lock wire the four capscrews in the rear mounting bracket.



With the middle finger on your right hand push up on the protruding end of the pin—below the bracket. At the same time, jiggle the left-rear corner of the receiver with your left hand. Once the pin starts to move out, it can be grabbed by your left hand and removed. Then take out the gun.

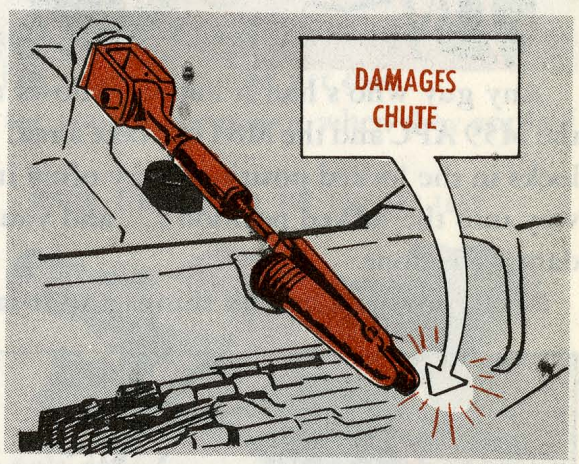
Something else . . . when the pin's in place, it wants to be secured by the small chain that's hooked on the rear gun support bracket. Just push the clip hanging on the end of the chain into the groove on the pin.

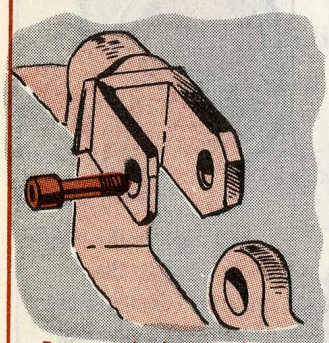
If the chain is missing, requisition a pin assembly, which gives you the chain and mounting pin. Ordnance'll send you the assembly under FSN 1005-608-1282.

RIGHT A WRONG

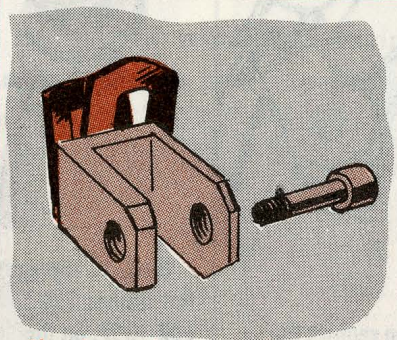
If you're in the crew of an M59 APC or M84 SP 4.2-in mortar, you can do your support unit a big favor—you, too, for that matter—by passing this info along.

Word has it that in some M13 cupolas the sight link assembly was installed in such a way that it damages the ammo chute during operation. So the idea is to let your support unit know that this is the way to fix things:

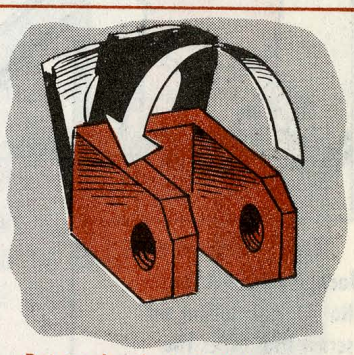




Remove the bearing bolt and then the sight link.



Then loosen (one turn) the clevis nut that holds the clevis to the cradle.



Rotate the clevis 180 degrees . . . and make sure no shims fall off.

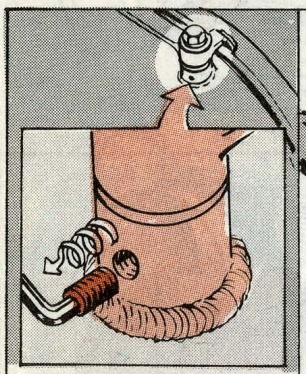
The clevis wants to be parallel with the trunnion bearing axis and the bearing bolt installed with its head to the right side of the clevis.

Everything will be back in shape after the sight link is installed and the clevis nut tightened.

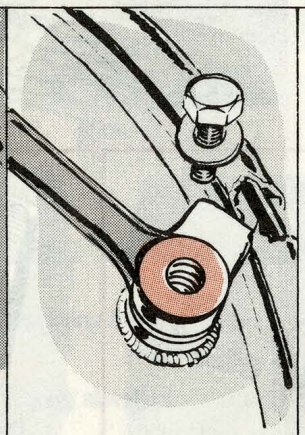
COSTLY FREE SWING

Any guy who's had it happen knows that the hatch seal in the M13 cupola on the M59 APC and the M84 can take a real beating when the hatch is closed with the locks in the locked position. Very often it's a case of the locks free swinging their way into the locked position . . . and you don't notice the bad situation until the damage is done.

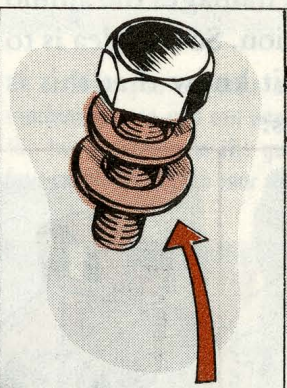
Well, now you can fix things and it takes no more'n a couple of washers.



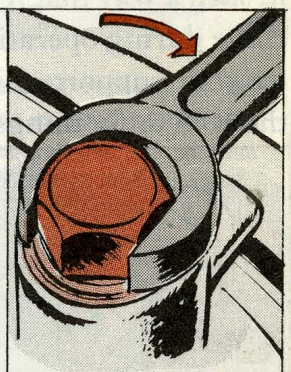
What you do for each lock, is take out the No. 10 hex-socket set-screw that locks the 3/8-in hex-head capscrew in the hatch body



Then remove the capscrew and the 3/8-in flat washer.



Next . . . slip a 1/2-in flat washer, FSN 5310-608-1357, on the capscrew and under the 3/8-in washer.



Now replace the whole works—tighten the capscrew enough to put a little drag on the lock to keep it from free swinging.

If you don't get that little drag add another 1/2-in washer or two until you do get the drag you need.

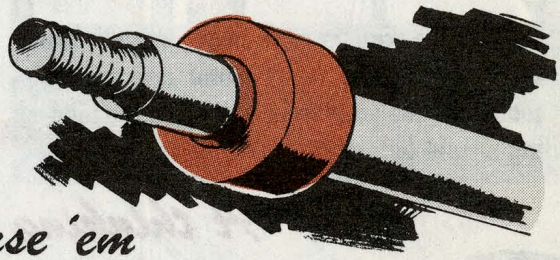
Once you've called a halt to the free swinging, you can tighten the setscrew that locks the capscrew.

M10 cleaning rod buffer

Some riflemen have been having trouble with the buffer on their M10 cleaning rods. Seems as though they spread, fall off the rod and get lost.

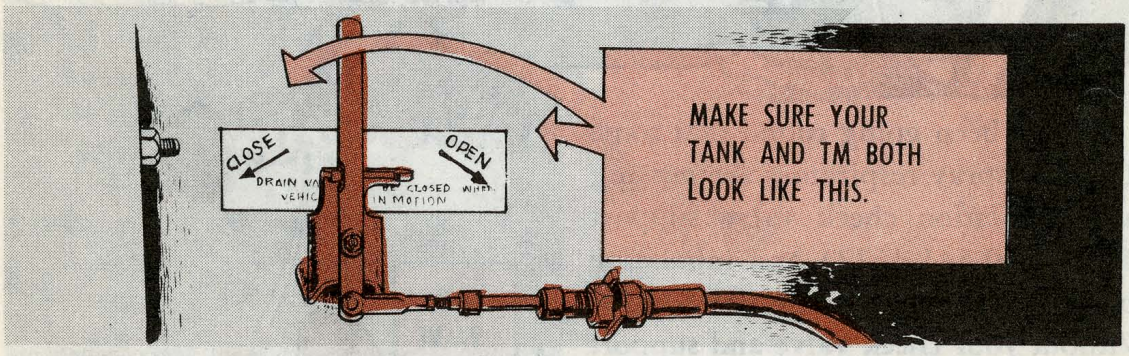
The buffer was originally authorized for your support unit when they applied MWO ORD B21-W5. It was shown as Ord Part No. 7268275. Now the buffer is an item of issue and you can get it direct. So if you need it, here's what you ask for on your DA Form 1546—Buffer, cleaning rod, FSN 1005-694-1662.

BUFFER, CLEANING ROD, FSN 1005-694-1662



Reverse 'em

Those book gremlins have been workin' overtime again, playing tricks on you M48A2 medium tankers. Seems that the last sentence of paragraph 90 in



TM 9-7022 (Mar 58) should read: "To open the engine compartment drain, the handle is pulled away from **close** detent and **placed into the open detent position.**" Also, the **open** and **close** positions in Figure 27 on page 54 should be reversed.

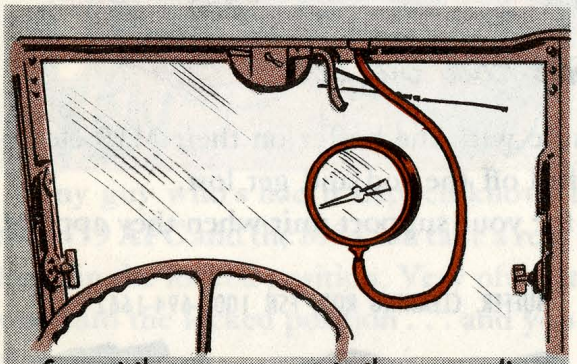
Leak locator

Have the trip tickets (DD Form 110) for your outfit's ¼-ton and ¾-ton trucks been showing up lately with a lot of these driver **remarks**?

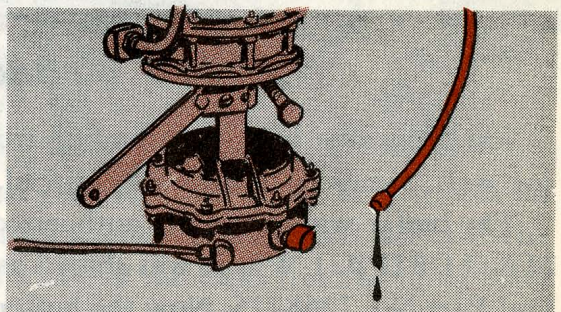
"Lays down a smoke-screen from the exhaust."
"Runs rough at idle."
"Wiper slows down when I step on the gas."
"Plugs fouled."

If you've been getting this kind of complaint on the DD 110, odds are you've got a leak in the vacuum side of the fuel pump assembly.

Before you go tearing that pump down, though, make sure it's a vacuum leak by using this quick check.

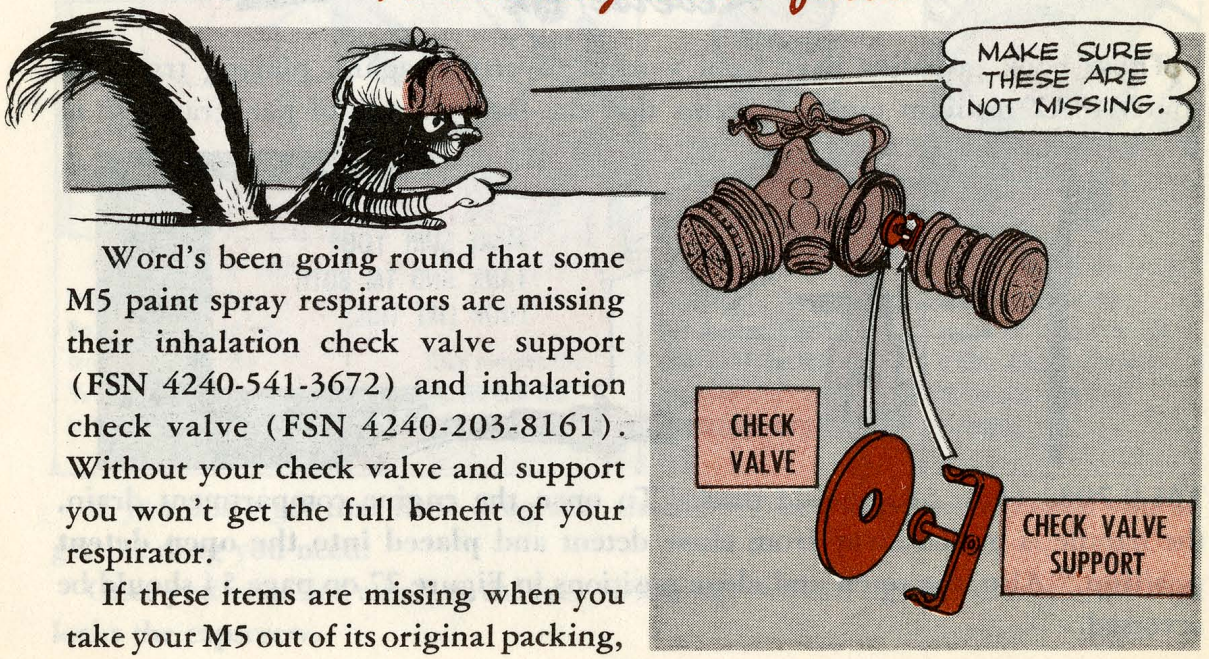


Connect the vacuum gage to the vacuum line at the windshield wiper motor and take a reading. If the vacuum booster's OK, the reading should be steady.



Then, to double check, disconnect the vacuum line to the intake manifold . . . at the fuel pump end . . . and look for oil or oil vapor in the line. If you find it, the pump's leaking and should be replaced.

A thinking man's filter



Word's been going round that some M5 paint spray respirators are missing their inhalation check valve support (FSN 4240-541-3672) and inhalation check valve (FSN 4240-203-8161). Without your check valve and support you won't get the full benefit of your respirator.

If these items are missing when you take your M5 out of its original packing,

then tell the Chemical people about it by sending a UER (DA Form 468) to the Commanding General, Army Chemical Center and Chemical Corps Materiel Command, Army Chemical Center, Maryland, ATTN: CMLAM-M-SM.

These items can get lost out of a respirator that you've been wearing too, so before you don your M5, take a look see to make sure the valve and support's there.

Your trailers and semi-trailers—the ones with air-over hydraulic brake systems—been getting hot hubs after you use the brakes?

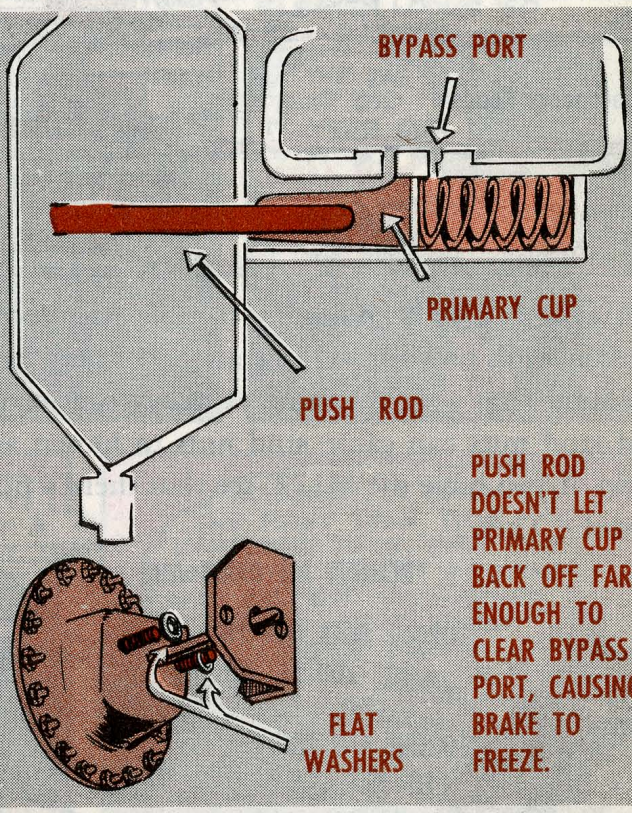
The particular ones that may be suffering from this kind of heat trouble are your M127A1 12-ton stake semis, your M131A1 and M131E2 12-ton gasoline tank semis, or your M455 5-ton low bed trailers.

Seems they get hot hubs as a result of the brakes failing to release after they're applied while traveling.

Here's how this trouble comes about. When you release the brakes, the air chamber actuating (push) rod doesn't back off far enough. So the primary cup in the hydraulic master cylinder doesn't clear the orifice that's supposed to let fluid return to the reservoir at the top of the cylinder.

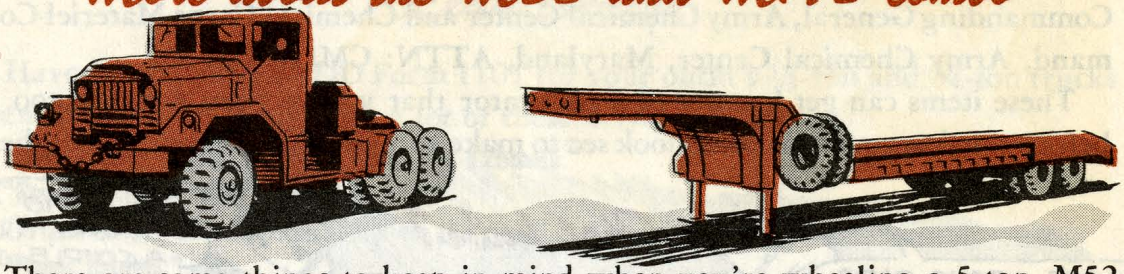
The result is a brake "freeze" in the ON position . . . and you've got those hot hubs that can burn up the brakes in a hurry.

To fix it, all you need to do is remove the air-chamber for each brake unit and install two flat washers on the studs between the air-chamber and the mounting bracket.



Washer, flat, corr-res-S, 21/32 ID, $1\frac{5}{16}$ OD, 0.095 thk—FSN 5310-022-1440—will back that push rod away and unfreeze the brake, like it tells you in MWO 9-2300-204-20 (15 Jan 59).

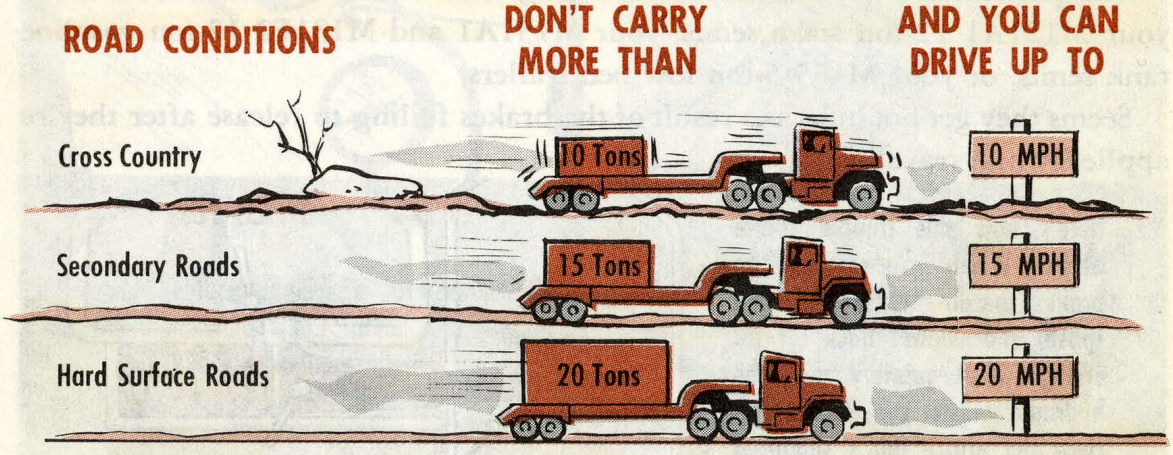
More about the M52 and M172 combo



There are some things to keep in mind when you're wheeling a 5-ton, M52 tractor-truck and a 25-ton, M172 semi-trailer combination. The load you're able to haul on that trailer depends upon these three factors:

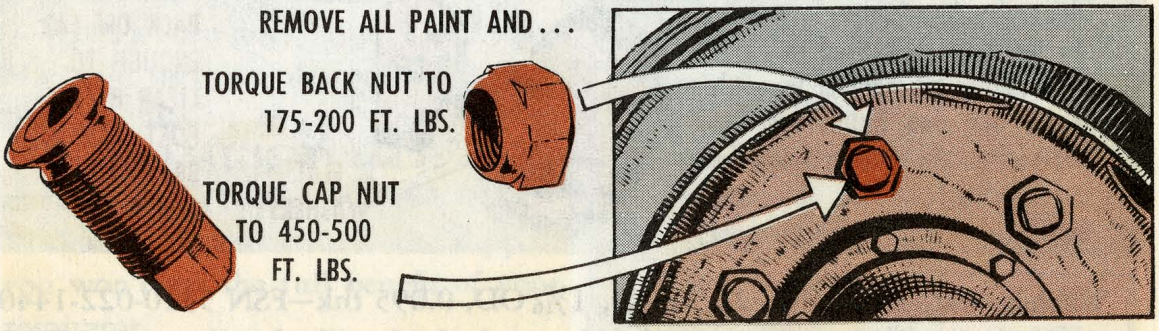
1. Your speed. **2.** Condition of road. **3.** Grade of road.

To get the best use from these factors and to cut down on tire failures, here's how you can apply them to make for a safer and less troublesome trip.

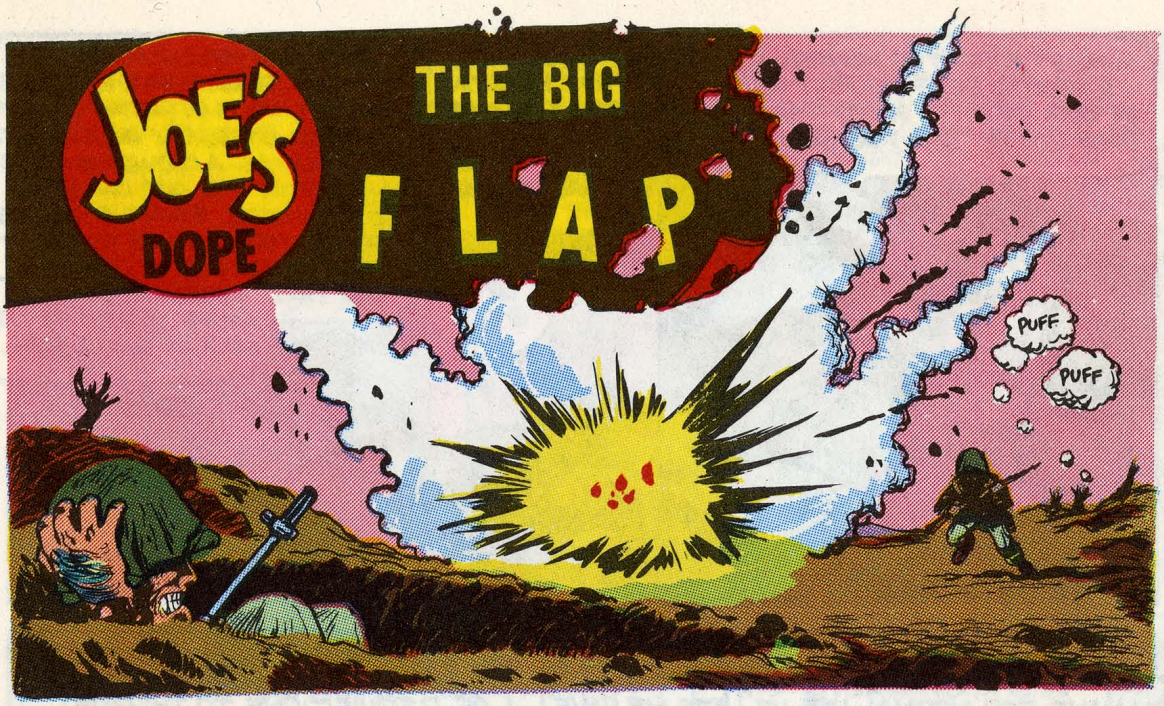


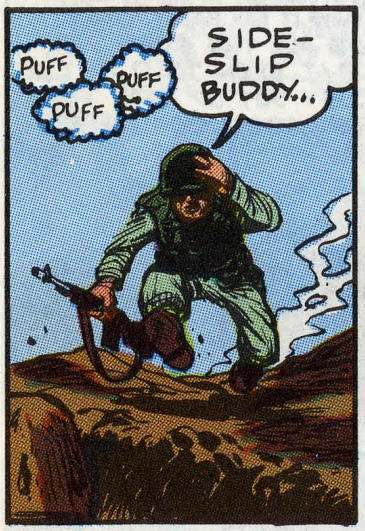
Maybe you've been having trouble with loose wheel stud nuts, or even worse, broken studs on your M172 trailer. It's been found that one of the trouble-causers is paint. That's right—paint. A heavy coat of paint on mating surfaces of wheel and stud nuts can cause stud nuts to loosen and eventually break the studs.

So, if you have the M172, see that there's no paint between the stud nuts and wheel. Then . . .



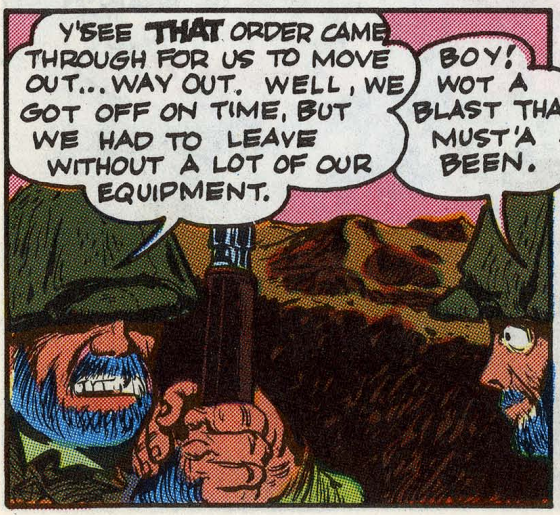
On a long haul it's a good idea to stop and check those stud nuts every now and then to make sure they're tight.


JOE'S DOPE
THE BIG FLAP
PUFF
PUFF


PUFF
PUFF
PUFF
SIDE-SLIP BUDDY...

HERE I COME...
WELL, IF IT AIN'T SERGEANT BROWN.

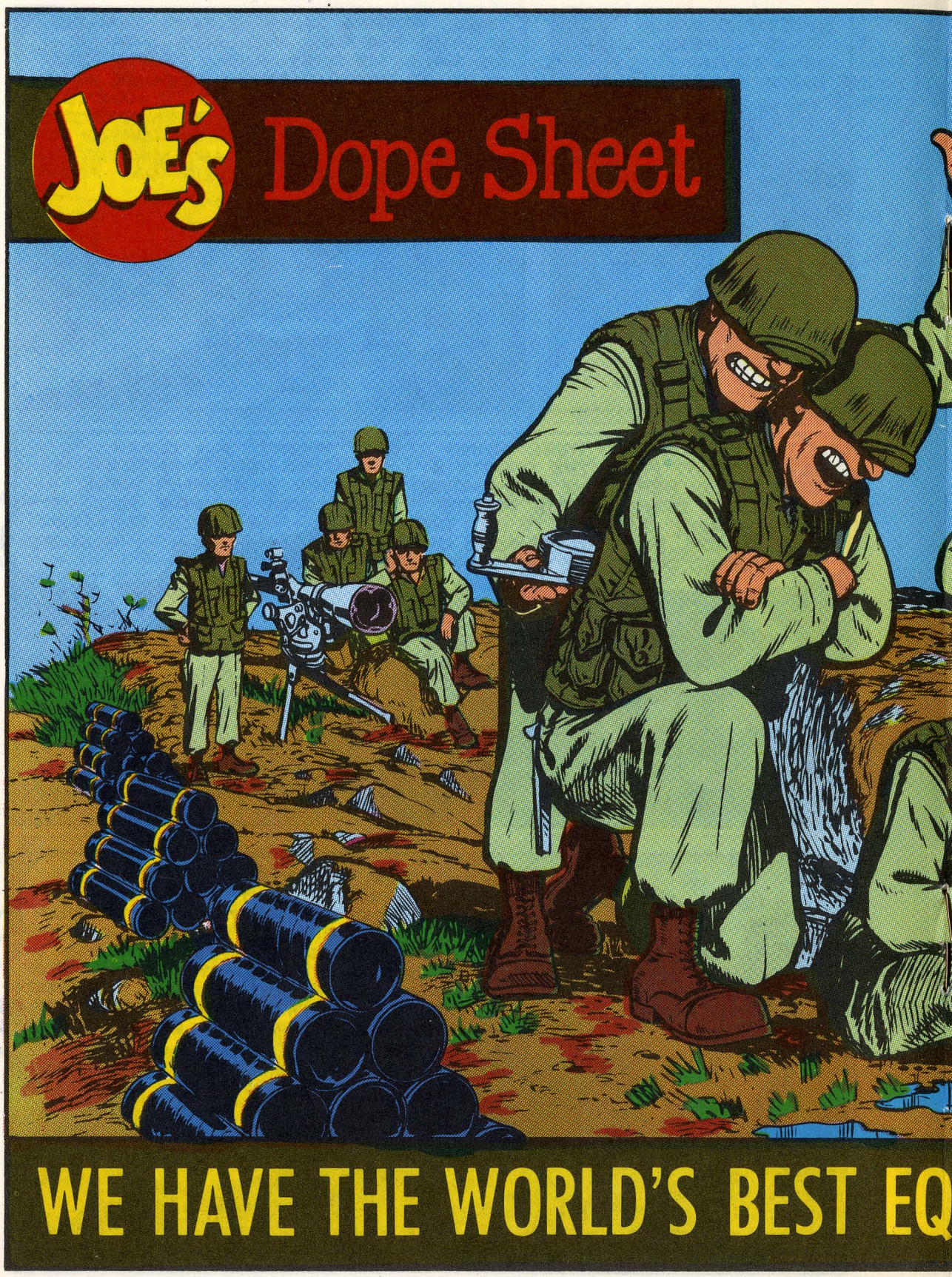
LAST I SEEN YOU, YOU GOT TRANSFERRED ... HEY! HOW COME YOUR SLEEVE LOOKS SO BARE?
THE BIG FLAP DID IT...Y'SEE OUR OUTFIT GOT HOT ...REAL HOT.


Y'SEE THAT ORDER CAME THROUGH FOR US TO MOVE OUT... WAY OUT. WELL, WE GOT OFF ON TIME, BUT WE HAD TO LEAVE WITHOUT A LOT OF OUR EQUIPMENT.
BOY! WOT A BLAST THAT MUST'A BEEN.

NO SWEAT! IT WASN'T THE FIRST TIME THIS HAPPENED TO US. ONLY THIS TIME WE WEREN'T STOPPING UNTIL WE...YEAH... YOU GUESSED IT, BOY...WE HEADED RIGHT INTO A POE STAGING AREA.
YUP! THEN RIGHT TO HERE, BY AIR.

ALMOST FORGOT TO MENTION ...I USED TO BE THE SUPPLY SGT. IN OUR OUTFIT UP TO THAT TIME (WITH TWO ROCKERS)
?!
LOOK... YOU MUSTA BEEN FOLLOWED. LOOKS LIKE AN ENEMY PATROL HAS CAUGHT UP.
LET'S GIT!
AS I WAS SAYIN' AT FIRST I WASN'T SURE WHAT HAPPENED, EXCEPT MY C.O. (A TWO BAR MAN) CAME STORMIN' IN, AND WITHOUT SO MUCH AS A "HOWDYDOO" STARTS A-CHEWIN' ME OUT ON HOW COME WE'RE SHORT ON TOOLS SPARE TIRES, WALKIE TALKIES, SNIPER SCOPES 'N STUFF LIKE THAT... Y'KNOW ALL THAT STUFF YOU DON'T USE MUCH IN GARRISON.
INSTEAD OF THANKIN' ME FOR SAVING THE UNIT FUNDS BY KEEPING JUST ENOUGH ON HAND FOR NORMAL USE, HE LETS ME HAVE IT!! Y'SEE, THE BATTLE GROUP C.O. WAS UNHAPPY ABOUT IT, AND HE STARTED CHEWIN' RIGHT DOWN TH' LINE... SO, THE C.O. GOT HIS, AND HE TOOK IT OUT ON ME... AT THIS TIME THE OUTFIT'S ALL SET TO MOVE, AND WITHOUT ITS AUTHORIZED STOCK OF EQUIPMENT.
HIT THE DIRT!!!
I EXPLAINED TO MY CO. THAT I HANDED IN A HURRY-UP BATCH OF REQUISITIONS TO TH' POST SUPPLY... WAS IT MY FAULT THEY DIDN'T HAVE ALL THE STUFF WE NEEDED ? (I EVEN TOLD TH' C.O. WOT A LOUSY SET UP THAT POST SUPPLY DEAL WAS... DOGGONE INEFFICIENT, TOO.
SO, WE BOTH FIGURED THERE WASN'T ANYTHING ELSE WE COULD DO BUT LET BATTLE GROUP SUPPLY WORRY ON IT. HAH! JIST THEN, TH' BATTLE GROUP CO AND HIS S-4 WANDER IN... THE BATTLE GROUP CO JUST STANDS THERE, STEAMIN... WHILE THE S-4 TELLS US ALL GEAR WE'RE MISSING IS COMING IN BY AIR...
CRUNCH! SNAP CRUNCH!...
THEY'VE LOCATED US AGAIN!! RUN, MAN... RUN!!!

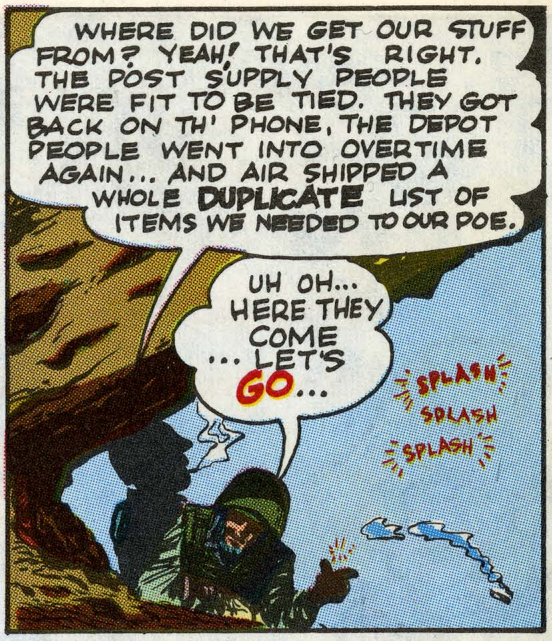
QUICK! DOWN THIS CREEK... WE'LL TRY N' THROW 'EM OFF...
"WELL, WOTAYA KNOW," I SAYS. THAT DID IT... THE S-4 FLIPS AND LACES INTA ME... HE SAYS THE POST SUPPLY PEOPLE TOOK CARE OF THE SITUATION BECAUSE WE, AT COMPANY WERE TOO STUPID TO HANDLE IT, (THAT I DIDN'T LIKE...) EVEN THO' I PUT 'EM IN A TIGHT BIND BY ASKING FOR EVERYTHING AT THE LAST MINUTE, THEY WENT OUT OF THEIR WAY FOR US.
I DIDN'T KNOW THEY WERE TRYING TO GET TH' STUFF FROM THE DEPOTS BY TELEPHONING BEFORE WE EVEN MOVED OUT. ALSO I DIDN'T KNOW TH' DEPOTS WERE WORKIN' OVER-TIME TO GET THE STUFF READY...BUT STILL NO GOOD, CAUSE WE SHIPPED OUT BEFORE THE STUFF CAME.
EASY NOW, LET'S TAKE A LOOK-SEE FIRST...
WHEW!! ALL CLEAR... OVER HERE!! UNDER THIS OVERHANG...WE'LL COOL IT HERE FOR A WHILE. BOY! AM I SOAKED.
THIS IS WOT REALLY HURTS. THE DEPOTS SENT THE STUFF TO OUR POST AS FAST AS THEY COULD ...THAT MEANS BY AIR ...'CAUSE RAIL FREIGHT WAS TOO SLOW AND PARCEL POST COULDN'T TAKE THE HEAVY STUFF. BOY! THAT AIR TRANSPORT SURE COSTS!! THE COLONEL SAID THE GENERAL THREATENED TO MAKE HIM PAY FOR THE EXTRA COSTS, EXCEPT THAT THE COLONEL WOULDN'T LIVE LONG ENOUGH TO PAY IT OFF...
HMMM... THAT REMINDS ME OF A PIN-UP I ONCE SAW.

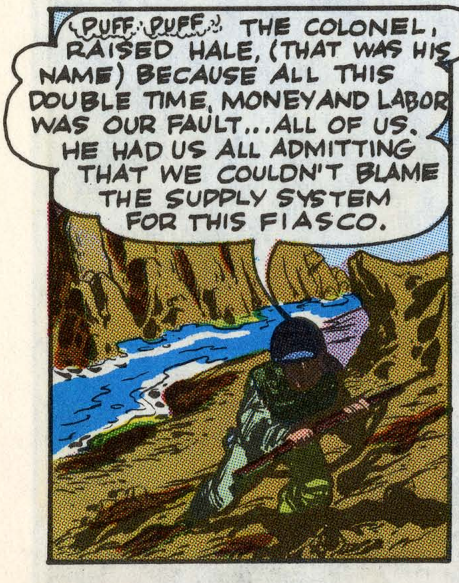

JOE'S
Dope Sheet
WE HAVE THE WORLD'S BEST EQ

JOE'S Dope Sheet
Want to stop those supply-moanin' blues?
Like walking in bottomless shoes?
Keep your actions up-dated
BEFORE you're ill-fated.
You can't roll, walk, or shoot using "dues"!
WE HAVE THE WORLD'S BEST EQUIPMENT...Take care of it

Want to stop those supply-moanin' blues?
Like walking in bottomless shoes?
Keep your actions up-dated
BEFORE you're ill-fated.
You can't roll, walk, or shoot using "dues"!
QUIPMENT...Take care of it

WELL, AFTER ALL THAT EXPENSE, THE DEPOTS COULDN'T GET TH' STUFF TO US BEFORE WE MOVED... ALL THAT GEAR WAS FLOWN TO THE FORT WHILE WE WERE GOIN' FURTHER 'N FURTHER AWAY FROM IT...

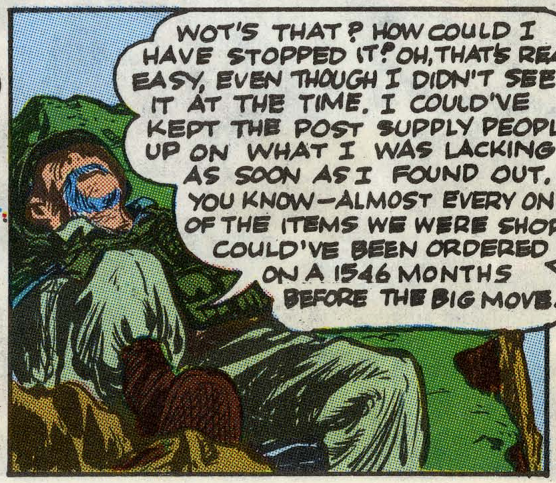

WHERE DID WE GET OUR STUFF FROM? YEAH! THAT'S RIGHT. THE POST SUPPLY PEOPLE WERE FIT TO BE TIED. THEY GOT BACK ON TH' PHONE, THE DEPOT PEOPLE WENT INTO OVERTIME AGAIN... AND AIR SHIPPED A WHOLE DUPLICATE LIST OF ITEMS WE NEEDED TO OUR POE.
UH OH... HERE THEY COME ... LET'S GO...
SPLASH
SPLASH
SPLASH


(PUFF...PUFF...) THE COLONEL, RAISED HALE, (THAT WAS HIS NAME) BECAUSE ALL THIS DOUBLE TIME, MONEY AND LABOR WAS OUR FAULT... ALL OF US. HE HAD US ALL ADMITTING THAT WE COULDN'T BLAME THE SUPPLY SYSTEM FOR THIS FIASCO.

WHEN IT CAME DOWN TO MY PART OF THIS SNAFU, I HAD TO ADMIT THAT EVEN THO' MY OWN COMPANY CO. HAD THE OVER-ALL RESPONSIBILITY FOR KEEPING THE OUTFIT ON ITS TOES, I WAS THE BOY DIRECTLY IN CHARGE OF KEEPING EVERYBODY SUPPLIED.

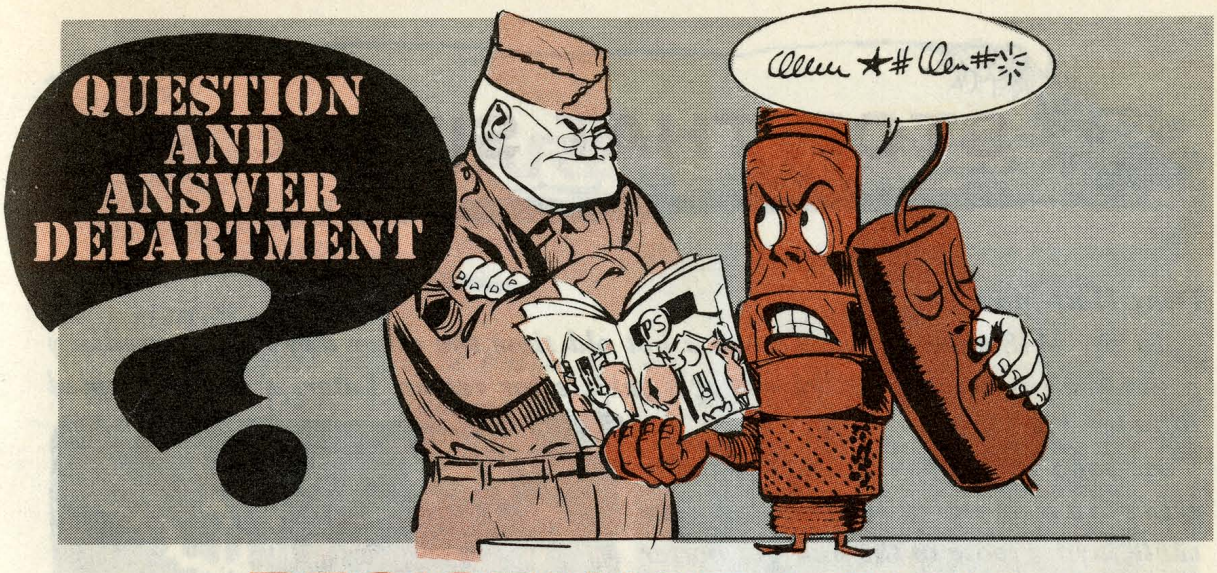
I BEGAN TO REALIZE THAT I WAS ACTUALLY IN THE SAME POSITION AS THE BATTLE GROUP S-4, EXCEPT THAT I WAS DOWN AT COMPANY LEVEL.

GROAN... WOT A CLIMB. THEY'LL NEVER CORNER US HERE.
MAYBE... WELL, ON A NORMAL GOOF, IT WOULD 'VE BEEN SETTLED BETWEEN ME AND THE OL'MAN... BUT THIS- ...MAN IT GOES RIGHT UP THE LINE, 'N MAKES EVERYBODY LOOK BAD.


WOT'S THAT? HOW COULD I HAVE STOPPED IT? OH, THAT'S REAL EASY, EVEN THOUGH I DIDN'T SEE IT AT THE TIME. I COULD'VE KEPT THE POST SUPPLY PEOPLE UP ON WHAT I WAS LACKING AS SOON AS I FOUND OUT. YOU KNOW—ALMOST EVERY ONE OF THE ITEMS WE WERE SHORT COULD'VE BEEN ORDERED ON A 1546 MONTHS BEFORE THE BIG MOVE.

I REALLY GOT CLOBBERED ON TOOL SETS, OVM AND RUNNING SPARES. I DIDN'T FIGURE IT WAS THAT IMPORTANT TO FILL IN ALL THE MISSING ITEMS UNTIL INSPECTION TIME CAME AROUND. AFTER ALL, THE GUYS IN THE OUTFIT REALLY DIDN'T NEED THAT STUFF IN GARRISON.
DON'T SEE 'EM...I THINK WE GAVE 'EM THE SLIP.
WE SHOULD BE BACK IN OUR OWN LINES SOON.
HOW COME YOU GOOFED SO BAD SARGE??
I'VE ALSO GOT TO ADMIT THAT I DIDN'T GET AROUND TO MAKING THOSE INFORMAL INSPECTIONS TO SEE WHAT WAS MISSING AS OFTEN AS THE CO. SAID I SHOULD.
BUT HE DIDN'T PUSH ME ON IT...AND I KEPT FIGURING IT WOULDN'T DO MUCH GOOD WHEN THE OUTFIT USUALLY DIDN'T HAVE ENOUGH MONEY CREDITS ON HAND.
SHH
THEY FOUND US AGAIN! ...C'MON DOWN INTO THE RAVINE ON THE DOUBLE!

WE'RE TRAPPED! BUT IF THEY WANT US, THEY'RE GONNA PAY THROUGH THE NOSE T'GET US.
BUT THE S-4 EXPLAINED TO ME THAT I COULD'VE PUT IN THE 1546'S JUST TO LET THE SUPPLY PEOPLE KNOW WE WERE SHORT. THEN WE COULD'VE PICKED UP THE ITEMS WHEN WE GOT A NEW ALLOTMENT OF CREDITS. AT LEAST THE ITEMS WOULD HAVE BEEN ON THE POST INSTEAD OF AT DEPOT*
*Check your regulations, tho, under some conditions, things not needed don't have to be ordered.
LIKE WE ALL AGREED... THE COLONEL, THE S-4, MY C.O. AND ME... THE ONLY WAY TO BE READY TO MOVE AT ANY TIME THE WORD COMES THROUGH IS TO HAVE EVERY BLESSED SUPPLY ITEM EITHER ON HAND OR ON A 1546, THAT RIGHT, CONSTANTINE?
HOLD IT... DON'T SHOOT.
IT'S CORP. GREEN ASSISTANT SUPPLY CLERK, COMPANY B, 400TH BATTLE GROUP, 160TH DIV. ATTACHED TO 75TH CORPS, 40TH ARMY...
WE'VE BEEN CHASIN' YOU FOR THE LAST THREE DAYS...
...PLEASE, BROWN, HOW ABOUT GIVING ME ALL THE DOPE FOR THIS DA FORM 1546? THE SUPPLY PEOPLE CAN'T SHIP YOUR G.I. TEETH IF YOU DON'T GIVE 'EM THE INFO THEY NEED.



RESISTANCE LOW?

Dear Half-Mast,

Was it an accident that you left out the multimeter resistance test in the Joe's Dope section on spark-plug cleaning and checking in PS 74? Or are we doing one too many tests?

CWO C. T. C.

Dear CWO C. T. C.,

It wasn't exactly left out, Sir. That article just stopped short after giving the bare essentials on plug performance.

When testing plugs, your main interest is whether they'll fire when the juice is applied. That's the purpose of the spark-plug cleaner and tester shown in PS 74. It gives you a comparison with a plug that's known to be good and clues you on how it'll perform under operating conditions.

The multimeter test has its own purposes, depending on your mission and the area where you're operating. If your mission is communications, then you'll be interested in the performance of those resistors, too, 'cause their main job is to suppress radio interference caused by the firing of the plugs.

It's good to remember, too, that resistors have a secondary job of keeping your vehicle from being zeroed in by unfriendly detection devices.

There's also a fringe benefit from those resistors. They give your plugs longer electrode life by cutting down the peak period of current flow across the plug gaps.

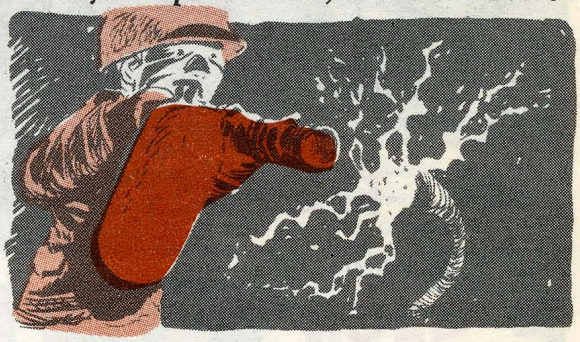
So, keep making that resistance test, too, when you've got the time and tools to do the job. Naturally, you check them for the values shown in Fig 4 of TM 9-8638 (17 Dec 56).

Half-Mast

STOP THAT SIZZLE

Dear Half-Mast,

In my M48 tank outfit we had a hot old time the other day . . . an auxiliary generator-engine was pulled out of a vehicle for repair. Later, a driver decided to move the tank.



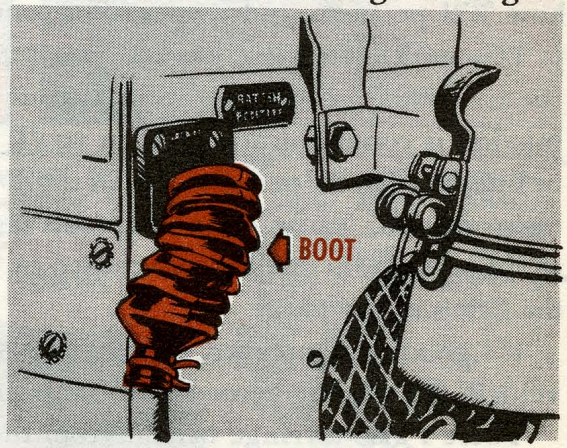
As soon as he turned on the master relay switch—wow-ee—the positive cable laying loose in the hull got hotter than a six-shooter on a TV western show. We got there with our fire extinguishers fast and cooled things off so nothing big happened.

One of the men said that any time Li'l Joe was pulled out the positive cable should be taped. We did, but I'm still edgy. Will that be enough to take care of this unhealthy situation?

SFC F. E. I.

Dear Sergeant F. E. I.,

No wonder the driver started a "hot" time. When he switched the master relay switch on he energized the open circuit from the battery to the end of the positive (generator main output) cable; in short, it became a "live" wire grounding out through the hull.



Taping the end of the battery positive cable would prevent that. But you don't have to rely on this fix any more once you get hold of MWO ORD 2300-20-1 (7 Apr 59). It allows you to put a permanent rubber boot over the positive cable terminal. Now when Li'l Joe is removed this boot slips over the cable's exposed terminal and'll protect it from shorting out.

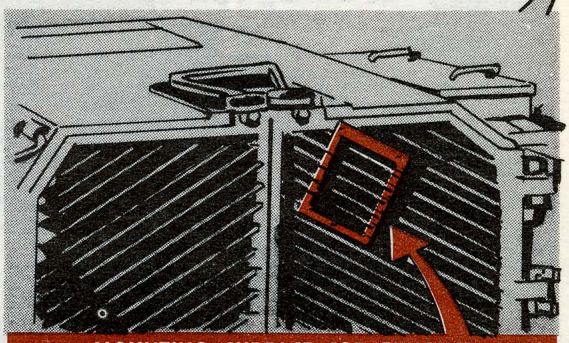
This **urgent** MWO not only applies to the M48 medium tank series (including the M67 flamethrower), but also to the M42 twin 40's series, M41 light tank series, M52 105-mm SP gun, M103 heavy tank series, M53 155-mm SP gun, M44 155-mm SP gun, M55 8-in howitzer and the M51 heavy tank recovery vehicle.

SQUARED AWAY

Dear Half-Mast,

Our outfit just got in a batch of M48A2 tanks. Okay. So looking at the engine compartment right rear access doors I see this tilted box-shaped design. Nobody here knows what it's for?

SP5 J. A. B.



MOUNTING SURFACE FOR EXHAUST DUCTS AND STACK ASSEMBLY FOR DEEP WATER FORDING.

Dear SP5 J. A. B.,

That removable area is the mounting surface to which the main engine exhaust ducts and stack assembly are bolted for deep water fording. The duct and stack arrangement vents the main engine exhaust system during M48A2 fording operations.

Half-Mast

SIX FOR RECOIL MECHS

Dear Half-Mast,

I read in TB Ord 303 (27 Apr 55), on the hydrospring and hydropneumatic recoil mechanisms, that a chrome plated gun or howitzer tube doesn't have to be exercised but only once every two years. I thought that the exercising was mainly to lubricate the seals and the rest of the inner recoil parts—not just to lube the tube.

Lt. R. W. O.

Dear Lt. R. W. O.

Looks like you didn't get to see Change 1 (25 Aug 58) to this tech bulletin, Sir. This change rescinds the "two year" instructions and says you must exercise all hydropneumatic and hydrospring mechanisms at least once every six months.

Half-Mast

The booms on a lot of the Garwood M20A(F) crane-shovels have been taking a beating when the rigs have been traveling with the booms lowered in the cradles. The constant sway and contact of the boom with the cradle guides damages and rubs a groove in the boom.

To stop this damage and keep the boom in A-1 shape, all you need to do is bolt a block of wood to the inside of the upright guides where you get the rub. These blocks'll take all the wear and tear instead of the boom. You want to be sure that

BOOM PROTECTOR

The booms on a lot of the Garwood M20A(F) crane-shovels have been taking a beating when the rigs have been traveling with the booms lowered in the cradles. The constant sway and contact of the boom with the cradle guides damages and rubs a groove in the boom.

To stop this damage and keep the boom in A-1 shape, all you need to do is bolt a block of wood to the inside of the upright guides where you get the rub. These blocks'll take all the wear and tear instead of the boom. You want to be sure that the wood is not too thick—it could stop the swing lock from engaging. When they're worn down—just replace 'em.

You don't want to weld any strips of metal along the side of the boom frame as a bumper pad. Welding or fish-plating any part of the crane boom frame is strictly no go. The heating and cooling of the metal could dangerously weaken the boom instead of making it stronger.

Stick to the wood block—it'll do the same job without damaging the boom.

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STUCK? GET SOME HELP

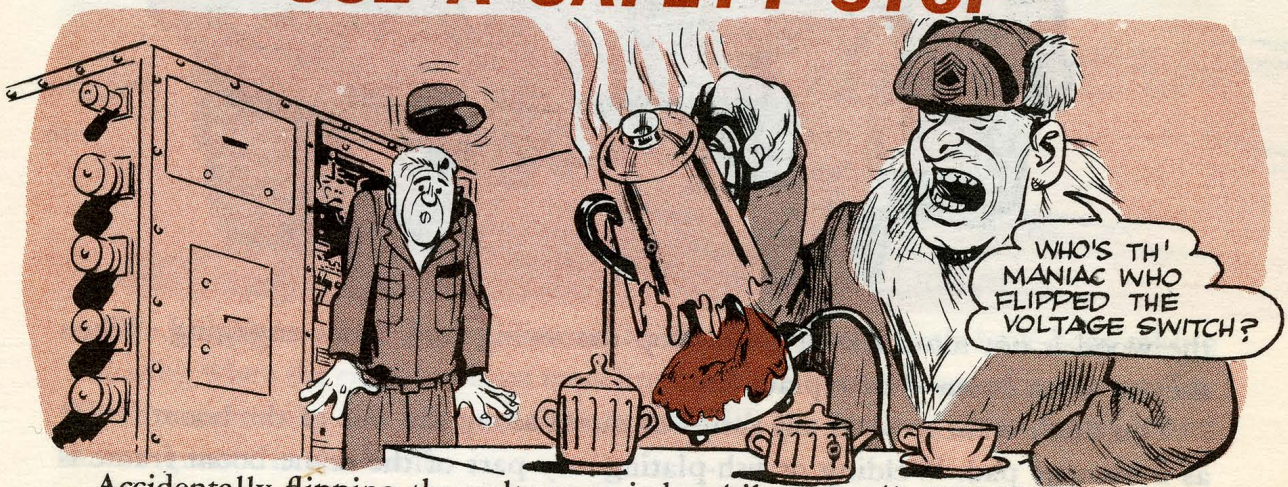
Take it easy when you're jockeying your 20-ton Garwood crane-shovel cross-country. If you get yourself bogged down your FWD carrier's going to need some extra muscle to get out.

It's no good punishing your FWD engine and transmission when you're mired in deep sand or mud . . . or trying to get traction on a rough grade. If you thump the gas pedal with a heavy foot here, you can tear the innards out of the transmission.

You'll probably save 1,000 bucks worth of parts alone if you'll get a wrecker or some heavy equipment to winch you out . . . or to lend that extra muscle that you need to get yourself out.

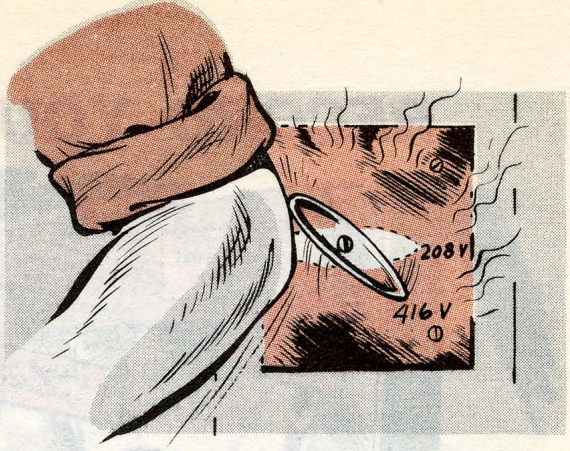
Don't Flip Your Switch...

USE A SAFETY STOP



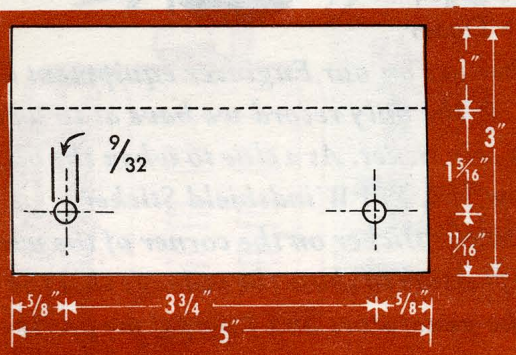
Accidentally flipping the voltage switch while your 45 KW Hollingsworth motor-generator Model JHMX45B is operating can give you and your rig lots of headaches.

If the switch position is changed from 208 volts to 416 volts, other equipment could be damaged and the change-voltage-switch will burn out. A safety stop'll keep your equipment from getting high voltage when you're operating on 208 volts by keeping the switch from being thrown.

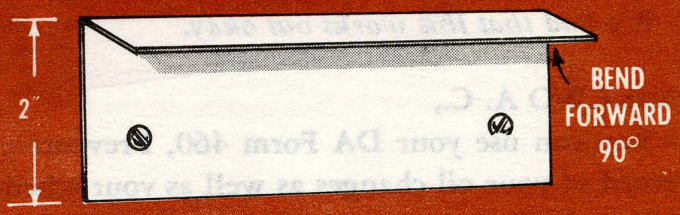


You'll need a piece of U. S. gage 18 sheet steel, three inches by five inches. You can make a batch of 'em from steel sheet, carbon, hot rolled, U. S. gage 18, 15 inches wide by 24 inches long. It comes under FSN 9515-230-6651 (Eng).

It's no sweat for you to cut the 3-in by 5-in piece and drill a couple of 9/32-in diameter holes, 5/8 inch from each side and 11/16 inch from the bottom.



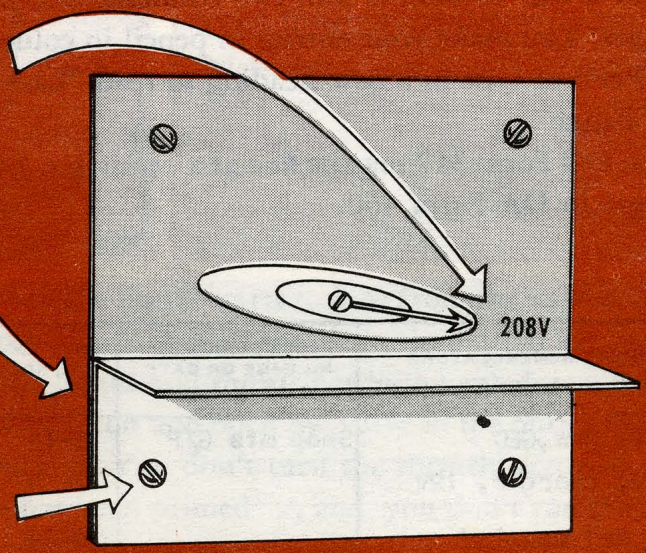
Then you bend it, like so.



Now, you set the handle at the 208-volt mark.

Then you take off the two selector plate bolts at the bottom, and install the safety stop.

You finish the job by replacing the bolts, and spinning 'em tight.



RECORD YOUR OIL CHANGE

Dear Sgt Dozer,

Oil changes on our Engineer equipment don't always jibe with our regular PM services, so the only record we have as to when the crankcase oil was last changed is on our trip ticket. As a clue to when the oil needs changing, we've been using the DD Form 317, PM Windshield Sticker.

We put the sticker on the corner of the windshield on our truck-mounted cranes and compressors to show the mileage that the oil needs changing. On smaller equipment, like generators and pumps, we put the sticker on the housing near the hourmeter.

We find that this works out okay.

CWO A. C.

Dear CWO A. C.,

You can use your DA Form 460, Preventive Maintenance Roster, to keep a record of your oil changes as well as your scheduled PM.

You divide column G into two columns. Use one for PM and the other for oil changes. You make your entries in pencil in column G because they'll be changing. Print or type in a new heading to read "Last PM Service, Hrs or Date, PM-Oil Change".

The DD Form 317 may be fine as a reminder, but you keep your record of oil changes in DA Form 460.

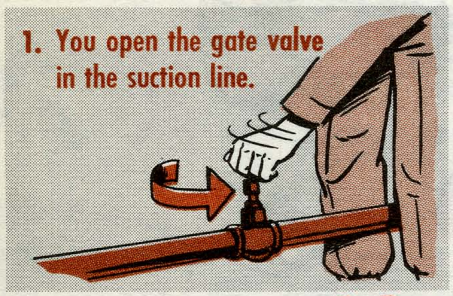
Sgt Dozer

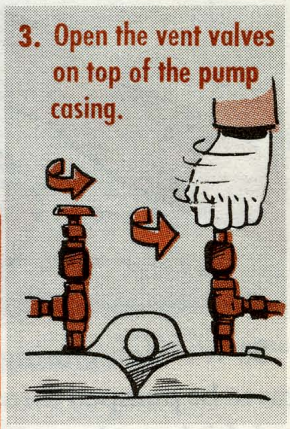
EQUIPMENT NOMENCLATURE *d*	NEXT LUBRICATION MILEAGE OR DATE *e*	UNIT SERIAL NO. *f*	LAST OIL CHANGE: ~~NEXT~~ PM SERVICE ~~MILEAGE~~ Hrs OR DATE *g*		EQUIPMENT REG. NUMBER *h*
Gen set, 3KW, GED	Shop mts G/P	B-15	400	340	S/N 35687
Battery, charger, 12V		B- 3	225	11/3/59	S/N 3854
Auger, skd mounted		B-23	800	720	BIMS-1820
Tractor, D-7		B-21	1130	940	S/N 4T-5839

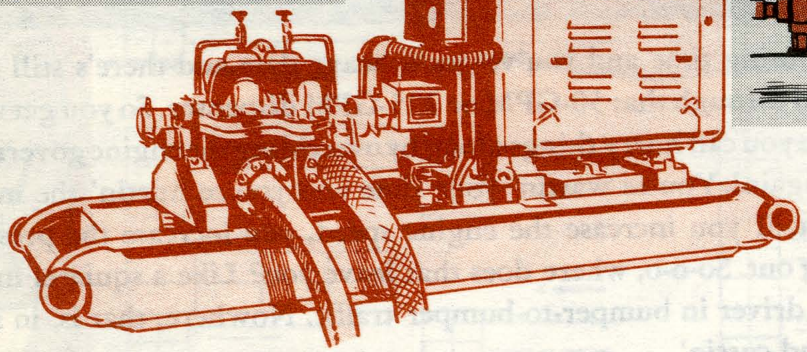
It's open and shut...
when you

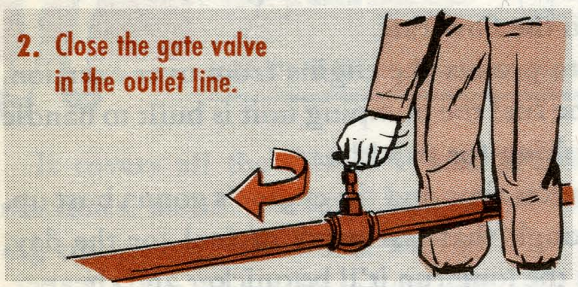
PRIME YOUR PUMP

You want to be sure the pump on your Reiner Model GP-60 pumping unit is primed before you start it. You can raise merry Ned with your seals, and could damage other parts of your pump as well. You set the valves before you start the pump like so—









Before starting your pump, you see that the casing and suction lines are completely filled with the same kind of liquid that you're gonna pump. This goes for new pumps as well as those that've got lots of mileage on 'em.

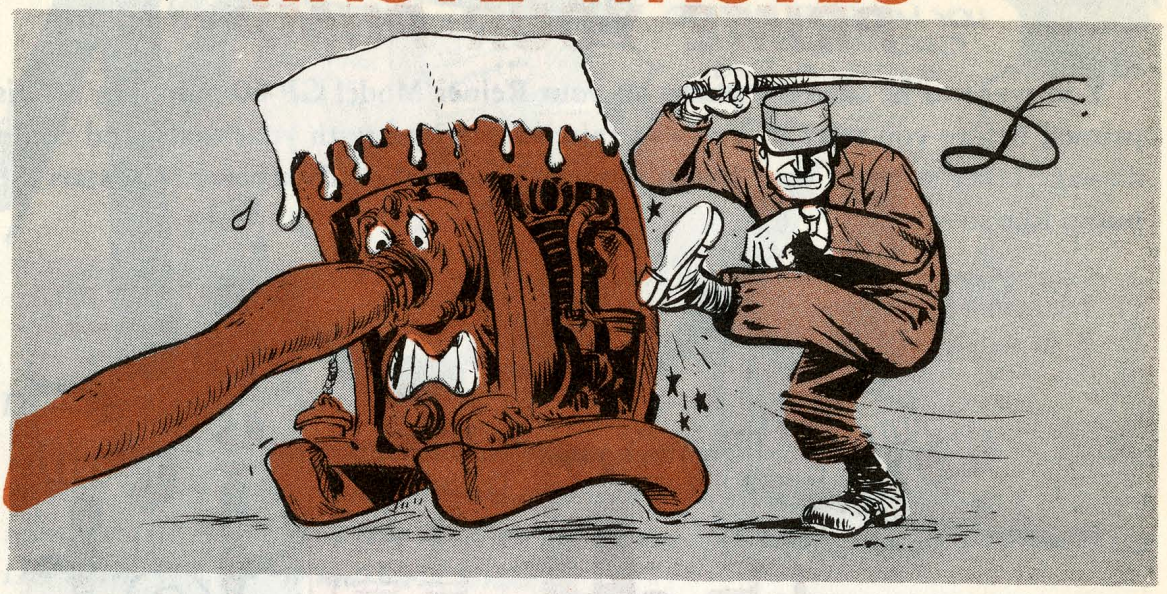
You close the vent valves when the liquid starts to flow from the valves. This'll clue you that your pump is primed and that all the air in the system has escaped.

When the pump's filled with liquid and the air has been vented, you turn the solenoid actuator to the RUN position and open the valve in the outlet line.

Keep this in mind—it's important: You don't turn the throttle actuator to the RUN position until the pump has been primed . . . and, you don't run the pump with the vent valves open—you could have an explosion.

You don't use these pumps for any other purpose. They're "booster" pumps only.

HASTE WASTES



So it's nigh closing time and you've got a heavy date and there's still a lot of gas to be pumped through that 50-GPM or 225-GPM dispenser. So you get anxious and think maybe you can hurry things along by overriding the engine governor, eh?

Well, think again! You're wastin' your time and you're hurtin' the machine.

Because: First, if you increase the engine speed, you increase the pressure of the fuel wanting out. So-o-o, where does that leave you? Like a squirrel in a cage . . . or a Sunday driver in bumper-to-bumper traffic. Nowhere, that is, in spite of all the fussin' and cussin'.

Because reving up the engine will increase the flow only slightly, as the size of the hose and nozzle is the major factor in the flow-rate.

Second, that governor's put on there to protect the engine from over-exertion. The governor lets the engine pump all the fuel the pumping unit is built to handle at a speed it can stand . . . any more is asking for trouble.

Try to force more than that through in less time and the engine's gonna bust up.

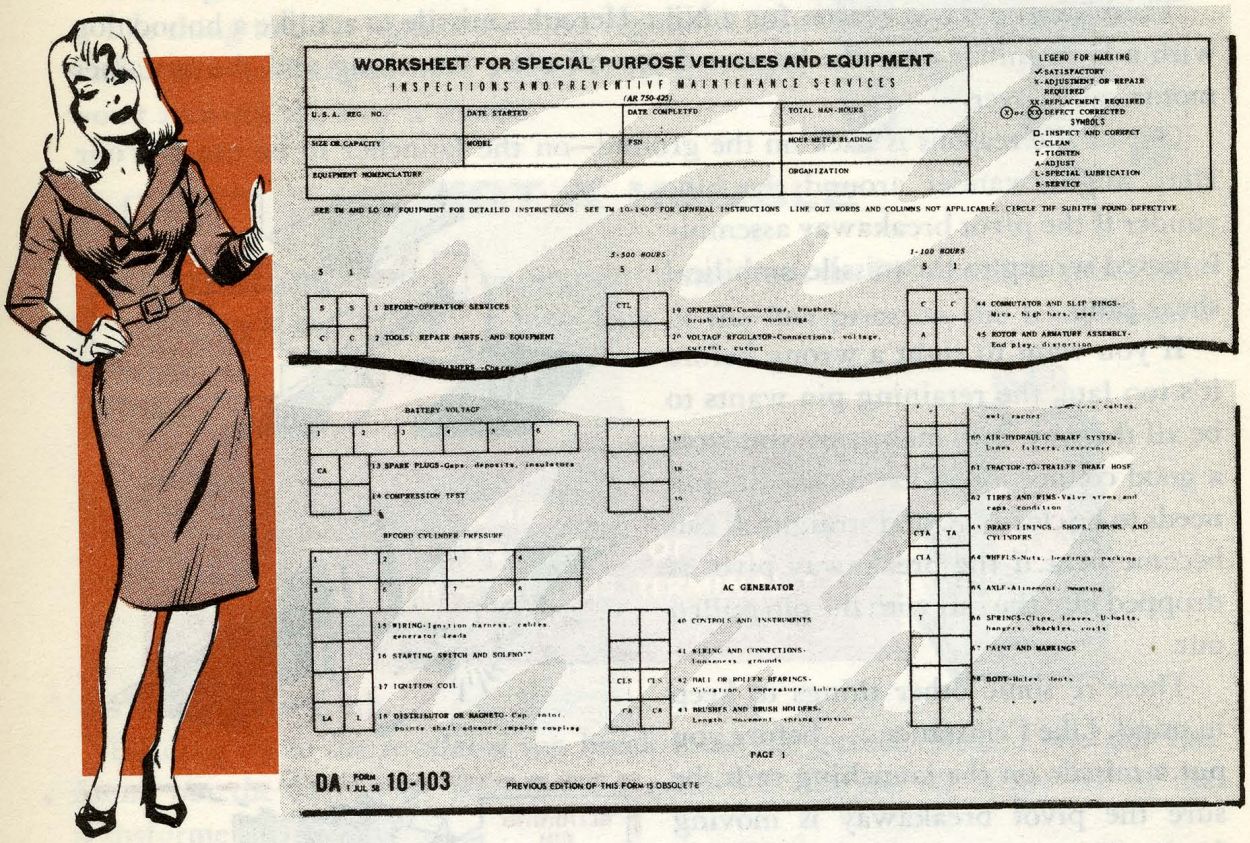
So, when comes the time to run through that last batch of fuel for the day, keep cool, eh? Stick to the speed limit. In the long run it'll be quicker and cheaper.

SERVICING SEGREGATORS

Been trying to find a pub that'll give the dope on servicing of gasoline segregators that're mounted on the 2½-ton M49 and M217 gasoline tank trucks? TB Ord 695 (26 Sep 57) will give the info.

FORM THAT FITS 'EM ALL

Not since Caesar wore rompers has there been a form as fitting to so many pieces of QM equipment as the new DA Form 10-103 (1 July 58)—Worksheet for Special Purpose Vehicles and Equipment Inspections and Preventive Maintenance Services.



It covers all the QM SPV and SPE stuff — trailers, textile and shoe repair machines, mobile laundry, bakery and bath units, refrigeration and gas dispensing equipment—the whole works!

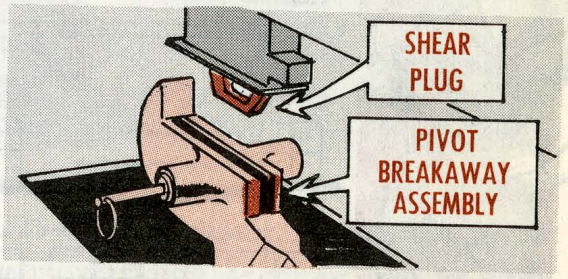
And it fits like a bikini on TM 10-1400 (July 58), the new style book for QM special units. In fact, the DA form is a skin-tight version of Section IV of the TM, the part that spells out inspections and scheduled PM services on the various types of equipment.

The smart operator'll come out miles ahead by grabbing his form in one hand, the TM in the other and by eyeballing his equipment inch by inch before inspection time rolls 'round.

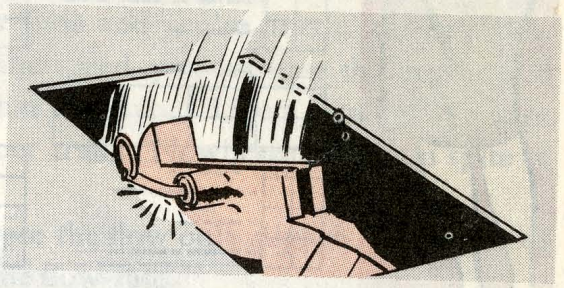
HERC WITH A QUIRK

There's more'n one reason for a Nike-Hercules missile to act like a hound dog with a bum sniffer once the booster drops off after launching and the sustainer motor takes over.

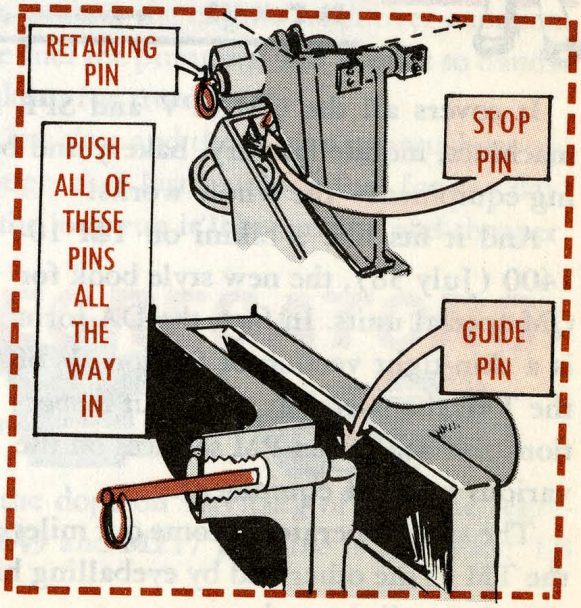
One of the reasons is back on the ground—on the launcher to be exact. Your Herc might wander around the blue yonder if the pivot breakaway assembly is mated wrong to the missile umbilical shear plug.



If you want to right a wrong before it's too late, the retaining pin wants to be all the way in to make sure you have a good connection. That means the pin needs to be clean . . . and straight. It can become bent if the breakaway pivot is dropped into the rail with the pin pulled out.



There're some other things to keep in mind. Like f'rinstance . . . before you put a missile on the launching rails, be sure the pivot breakaway is moving freely. The retaining pin, stop pin and internal guide pin (this one's found on rails that have a serial number up to 1595)—all these pins want to move without binding. And all of 'em oughta be pushed all the way in.

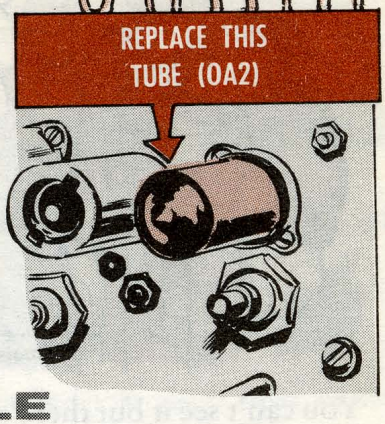


One more thing. Once the missile is on the rail and the breakaway pivot is joined to the umbilical plug, take a look at the retaining pin through the access hole in the bottom of the rail. The pin oughta be about ⅛ of an inch from the plug.

AFC TROUBLES

Next time you're doing your daily automatic frequency control check on your Nike-Hercules track radars and the AFC doesn't zero out right, you might be saving yourself some troubleshooting by trying a tube change.

The thing to do is replace the OA2 regulator tube with a new one. If you have a bum OA2, that AFC won't zero out the way it should.

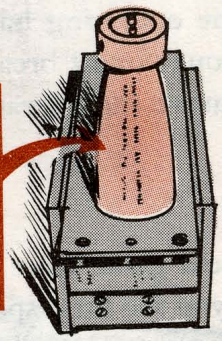


NOT A HANDLE

Before you remove the T5 pulse transformer from the RF circuit of your Nike-Hercules track radars, take a long look at the fine print on the transformer's terminal.

It says:

**"WARNING.
DO NOT PUSH, PULL OR LIFT
TRANSFORMER BY THIS TERMINAL."**



And that's the truth.

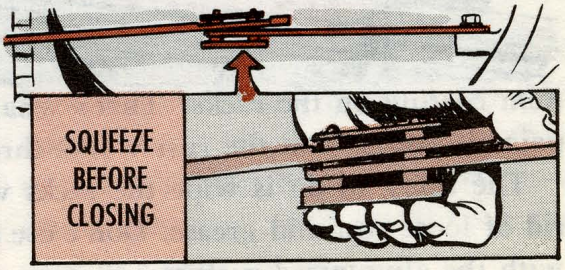
Holding on to the insulator can break loose the gasket. More'n one guy has found out the hard way. And that's a good way for the oil to get out of the transformer.

In other words, use both hands to lift the transformer.

BENT ARMS?

Your support unit can do the job all right. But there's no sense to taking up their time straightening out the arms on the inside of the RF cover in your Nike-Hercules track radars.

It's just as easy to keep 'em in good shape by pushing up on the latch before you swing the door shut. Closing the door with the latch down just plain bends those arms from here to there and back.



BRAKE BREAKER BREAKS

You can't see it but there's something that can cause you trouble with the 100-amp circuit breaker in the junction box of your Nike-Hercules launcher.

It's the circuit breaker-toggle-switch-handle, which can take the normal on-trip-off movement of the circuit breaker-operating handle. But, when you jerk the operating handle, you can just as easy bust the toggle switch handle. And your circuit breaker won't be any good to you.

So move the operating handle easy-like.

RACK FACTS

Take a good, close look at the storage racks on your Nike-Hercules launcher. Do you see little specks of rust, like maybe it's coming up through the alumi-

num coating on the racks? That's what has been happening at some sites. The paint is porous and the rust works through it.

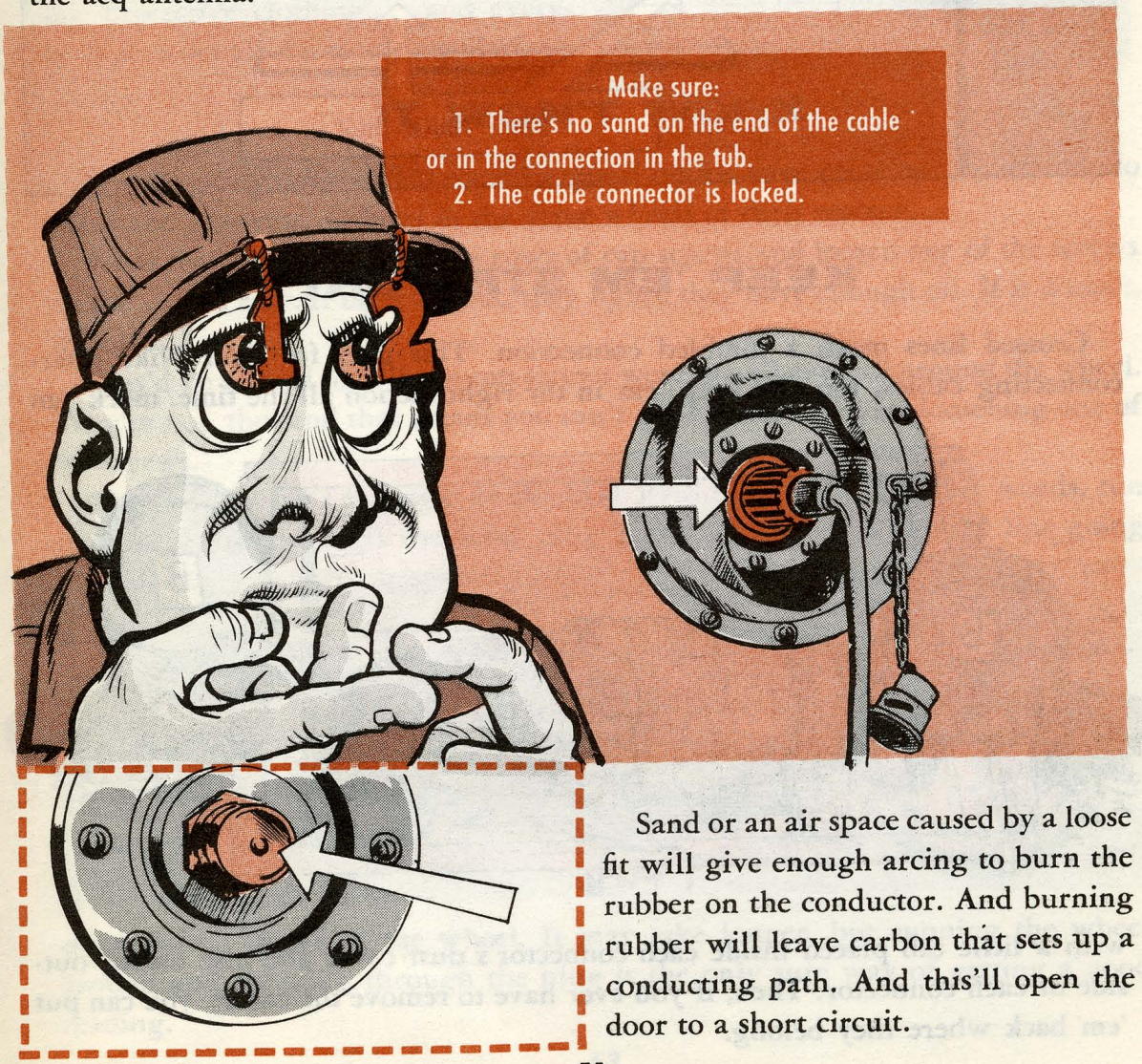
The thing to do is wipe the racks with some volatile mineral spirits to get rid of loose rust and grease. Don't use anything like sandpaper. That plays hob with the aluminized surface.

Then get hold of some aluminum paint and wipe a real light coat on. Don't brush it. You might get it on so thick you'll pick it right off when you roll your missiles across the racks.

The paint you want is Paint, Heat Resisting. You can get a one-gallon pail from the Engineers under FSN 8010-290-2878.

CLEAN AND TIGHT

It pays off real good to keep two things in mind when you go to hook up the high voltage cable that runs from your Nike BC van to the modulator tub on the acq antenna.



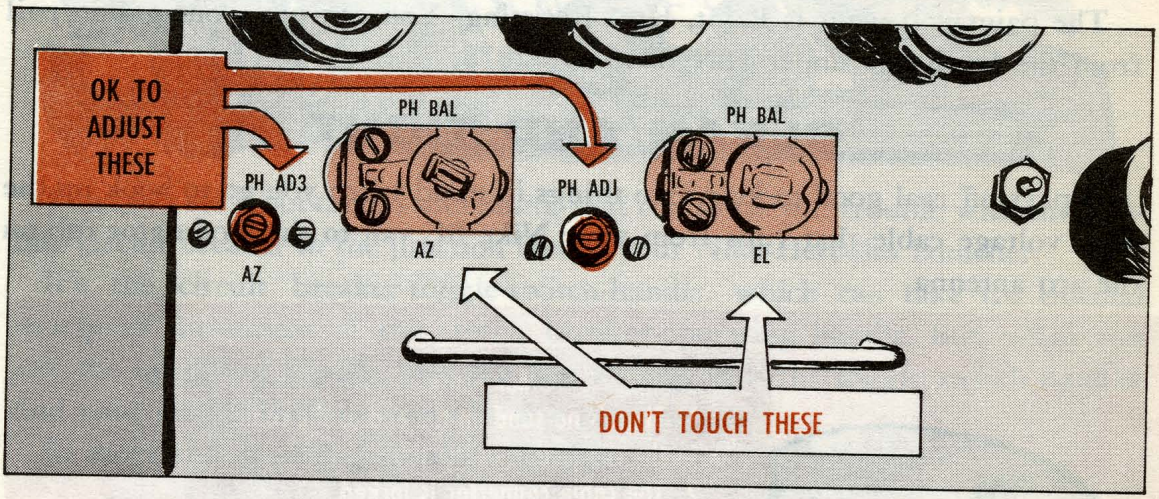
Sand or an air space caused by a loose fit will give enough arcing to burn the rubber on the conductor. And burning rubber will leave carbon that sets up a conducting path. And this'll open the door to a short circuit.

IT SHOULDN'T PHASE YOU

Hey now . . . easy does it with the screwdriver in your Nike RC van.

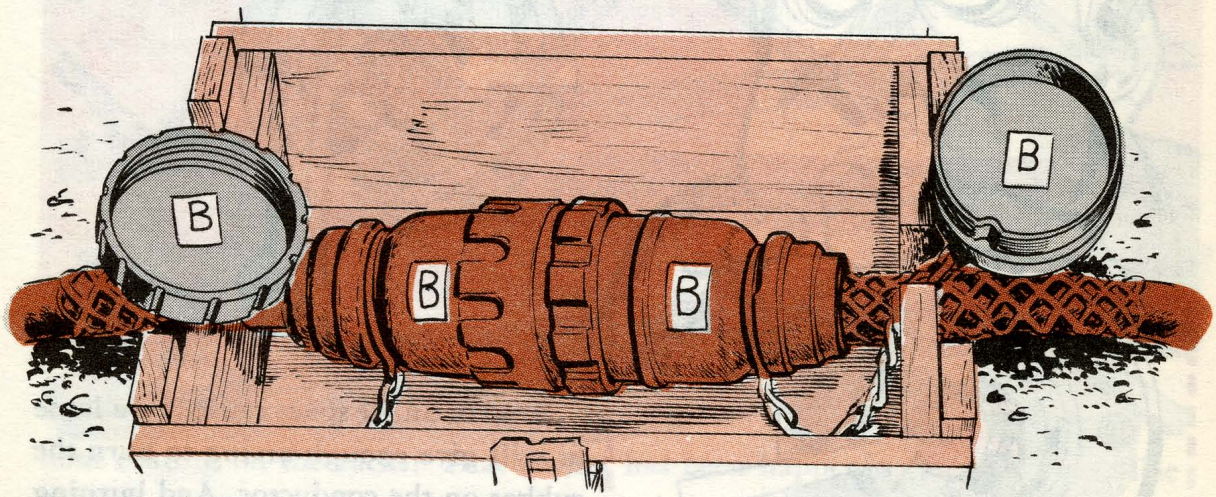
When you're making adjustments in the phase unit of the radar range and receiver cabinet—**thimk.**

You can make the PH ADJ azimuth and elevation adjustments. But don't touch the PH BAL adjustments. Those are for the guys in the upper echelons to make.

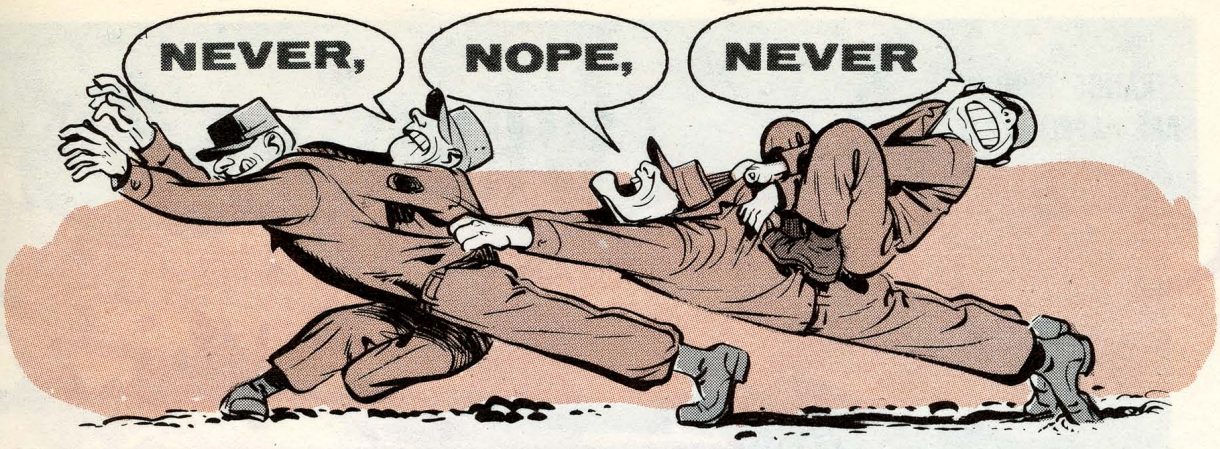


KEEP 'EM STRAIGHT

Crossed lines mean a jumbled connection. This goes for your Nike interconnecting cables, too. To keep 'em in the right section all the time, mark 'em

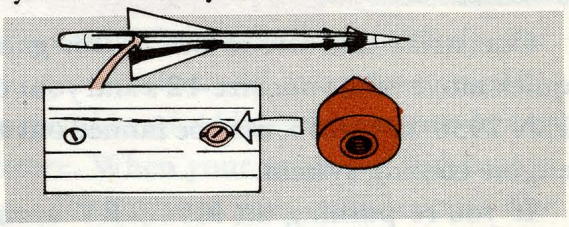


with a little tab placed inside each connector's dust cover and also on the outside of each connector. Then, if you ever have to remove the cables, you can put 'em back where they belong.



Those Nike-Ajax fuel and oxidizer teflon stoppers are never removed from a fueled or contaminated missile just anywhere or anyhow.

Remember: Before you take out the plugs, the missile wants to be in the fueling area . . . you want to be wearing protective clothing . . . and everybody follows all the safety regulations.



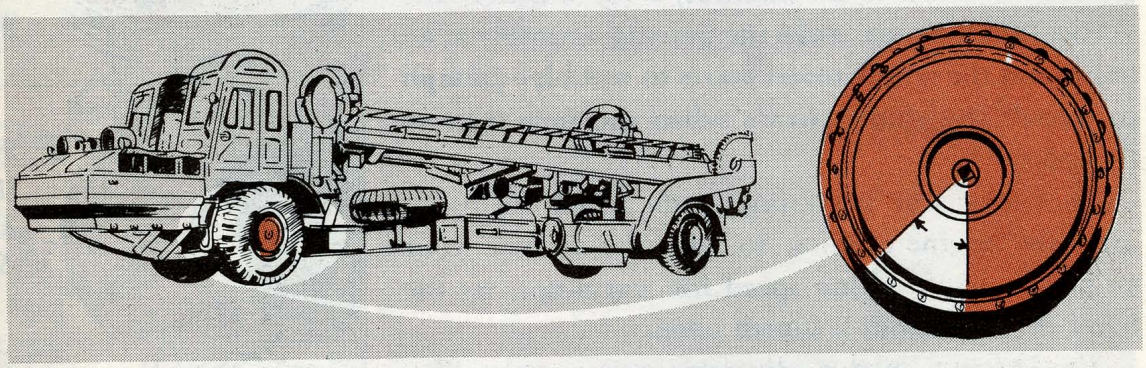
IT WON'T WORK

Word's going around that some Corporal outfits have come by a quick way to check the gear case oil level in the drive wheels of their erector.

What they do is count up two rows of cap screws and loosen one of the screws on the second row. If oil leaks out, they figure they have enough oil. If it doesn't, the oil is low.

This'd be a good idea if the cap screws were spaced even all around the wheel. They're not, tho, and that means you can't get a good check by loosening one of the screws.

No, Sir . . . it pays to play it by the LO9-5048 in this case. In other words, run the wheel around until the level plug is 45 degrees off a vertical line going



through the center of the wheel. It may take longer, but running the wheel around and checking through the plug is the only sure way of getting a good reading.

STRANGE THINGS ARE HAPPENIN' . . .

WHEN YOU . . .

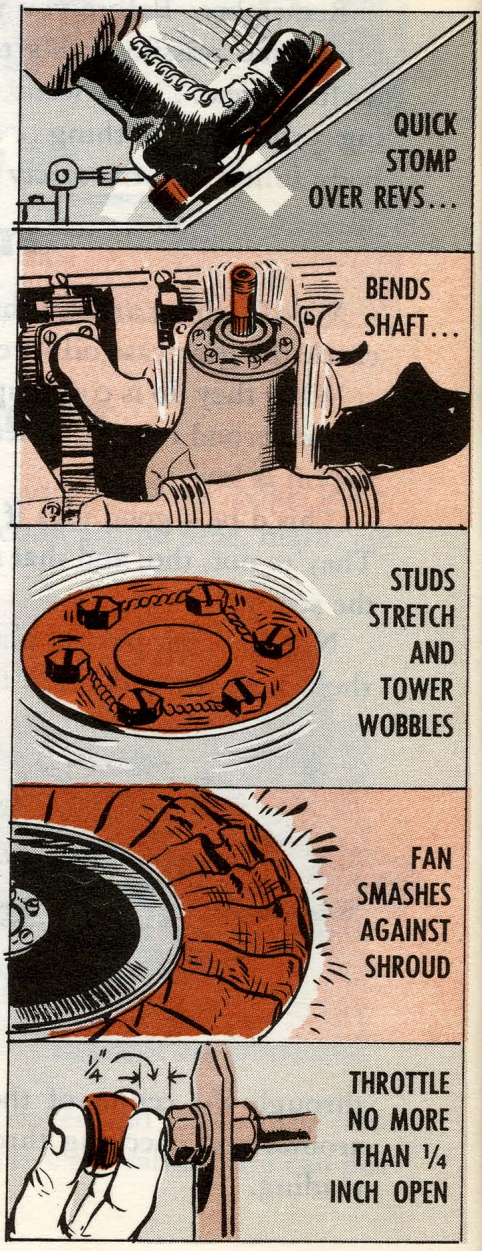
One strike and you're out in this game. Just one quick move with your size-12's and your ol' fan rotor, FSN 2930-294-0255, may be fanned out all over your engine cooling system.

If you're pushing an M51 TRV around with its 1790-6 engine—or the 1790-8 harnessed to your M48A2 medium tank—you know you've got your hands on a peppy bundle of power. Either one of these packages packs enough wallop to belt the blazes out of your engine oil cooler fan assemblies. At times it only takes a quick, hard stomp on the accelerator pedal to do the damage.

The vertical drive shafts on the fan rotors will lag behind the RPM your engines are putting out. If the difference in RPM gets too far apart, this difference will cause the whole tower assembly to get the shakes. Before you know it, the assembly's out of kilter—the vertical shaft bends, cocks the bearing assembly at an angle and the whole tower starts to wobble—enough to stretch the studs. Now's when the fans start to fly apart.

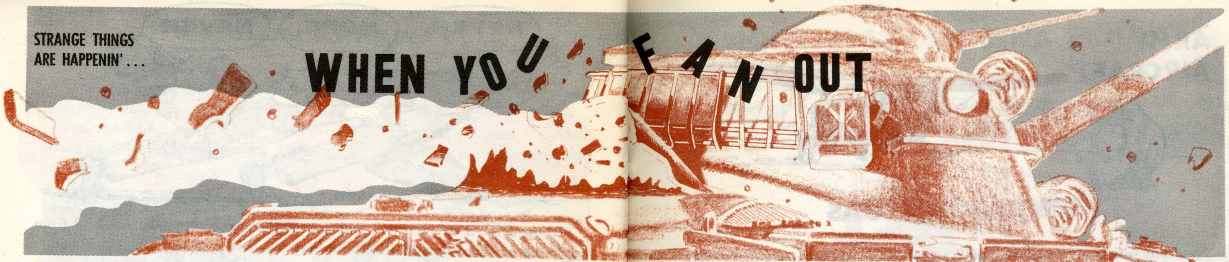
That means no stomping on the pedal during or after the engine catches. So, in order to hold your engine at a safe idling speed for warm-ups, set the hand throttle about a fourth open.

Since no two linkage adjustments are exactly alike, you may have to vary the throttle setting for idling. Only be sure to move that hand throttle slow and easy once you get her started.



STRANGE THINGS ARE HAPPENIN' . . .

WHEN YOU FAN OUT



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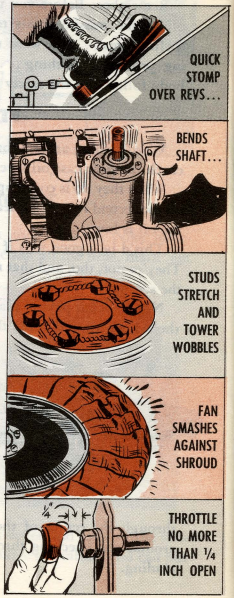
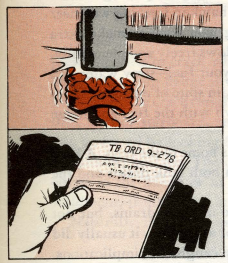
That means no stomping on the pedal during or after the engine catches. So, in order to hold your engine at a safe idling speed for warm-ups, set the hand throttle about a fourth open.

Since no two linkage adjustments are exactly alike, you may have to vary the throttle setting for idling. Only be sure to move that hand throttle slow and easy once you get her started.

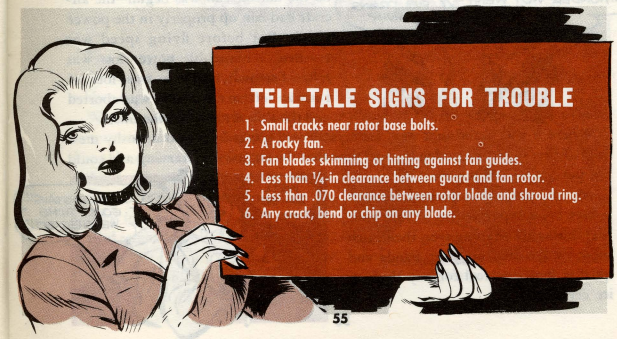




The smoothest touch in the world won't help you, though, if you get reckless and overprime your engine. Don't forget that a fuel injection engine thrives on a rich mixture. When your mags get a chance at all that raw gas feeding into your cylinders, it's like belting each piston with a sledge hammer.

Besides being a careful driver, it pays to have your outfit's mechanic call for an Ordnance team to dye check the rotor fans for cracks in accordance with TB Ord 9-278 (Apr 59).

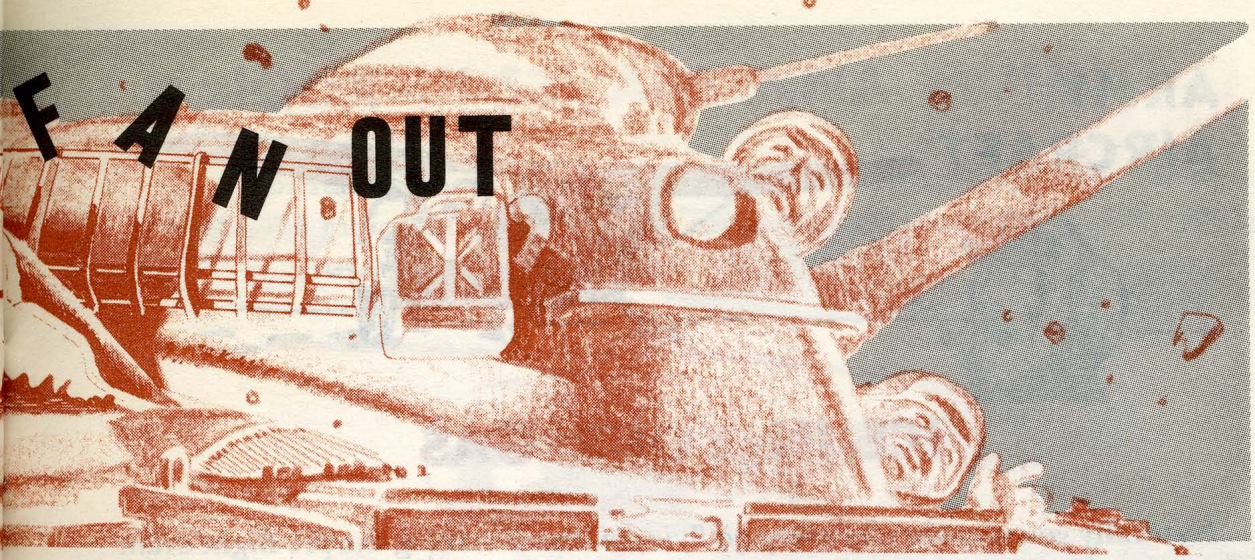
Of course, you'll make sure you protect yourself by buttoning down the top deck and closing the grille doors when you're starting or running your engine.

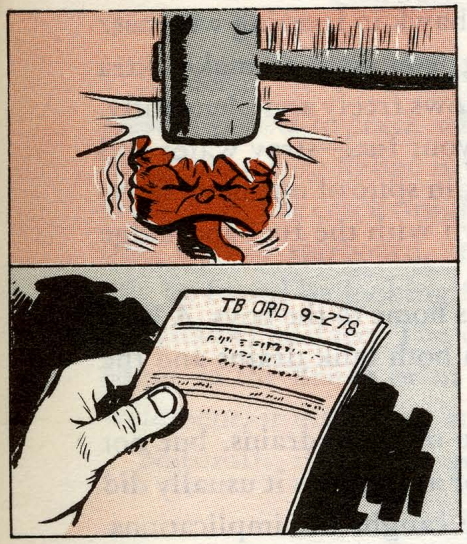


TELL-TALE SIGNS FOR TROUBLE

1. Small cracks near rotor base bolts.
2. A rocky fan.
3. Fan blades skimming or hitting against fan guides.
4. Less than 1/4-in clearance between guard and fan rotor.
5. Less than .070 clearance between rotor blade and shroud ring.
6. Any crack, bend or chip on any blade.

FAN OUT





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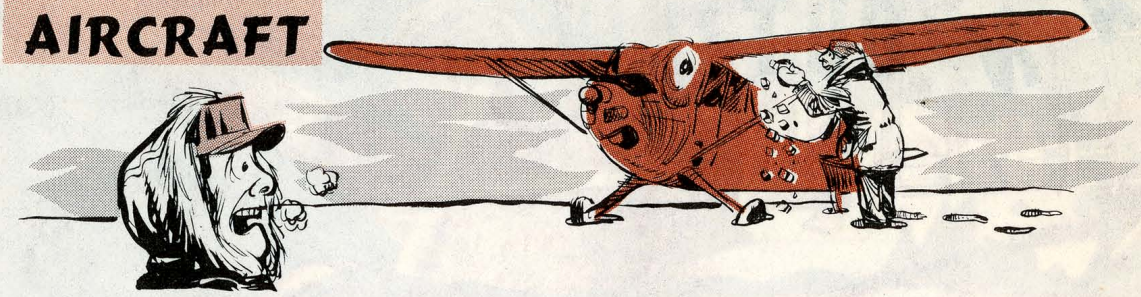
TELL-TALE SIGNS FOR TROUBLE

1. Small cracks near rotor base bolts.
2. A rocky fan.
3. Fan blades skimming or hitting against fan guides.
4. Less than ¼-in clearance between guard and fan rotor.
5. Less than .070 clearance between rotor blade and shroud ring.
6. Any crack, bend or chip on any blade.

ARMY AIRCRAFT



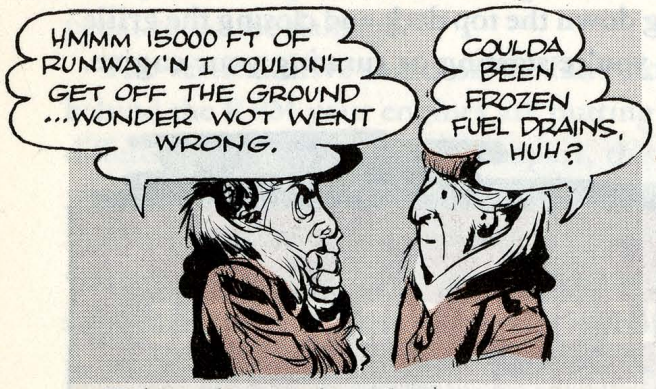
ICE IN YOUR GAS

Naturally you wouldn't let a ship go flying without making the pre-flight drain check on the gas tanks. But do you watch that test like a hawk in freezing weather?

Whenever the temperature is at or below freezing, you want to make extra sure that gas not only flows from the drain cocks, but flows freely and plentifully. Because it is possible that ice crystals have formed in your fuel—stray water and condensation do turn up in the best regulated fuel tanks, in spite of our best efforts to keep 'em out. And these ice crystals can travel down with the fuel and lodge in the tank outlets.

A near miss at an Army airfield recently brought this home to the boys. A Bird Dog had been pre-flighted, and fuel was drawn from both tank drains and the fuel filter drain.

Now, here's the point: Fuel flowed from all three of these drains, but not quite as fast or as freely as it usually did —and nobody caught the implications. So the takeoff run was begun—the aircraft had run up properly in the power check. But before flying speed was reached, a noticeable power loss was felt. Fortunately there was lots of runway left, so the takeoff was aborted and the ship returned to the line.

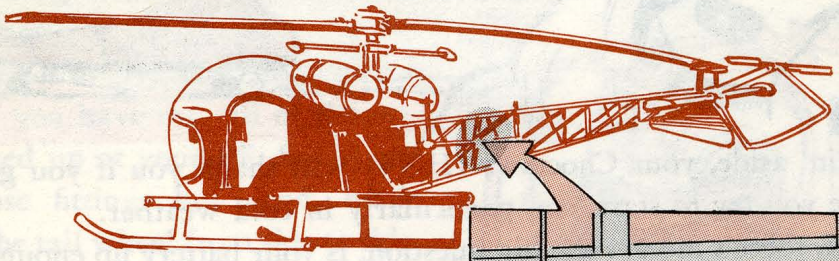


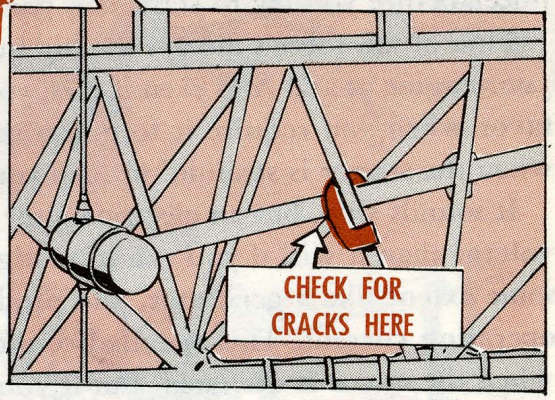
Where it was found that stray ice crystals had ganged up into a slushy mess in the filter, so far restricting the fuel flow that the engine was starving and could not put out takeoff power.

So, cold and uncomfortable though it may be, it'll pay you to be sure your fuel drains are running free, then catch some of the fuel on your hands and quickly look and feel for any slush or ice crystals.

SIOUX (H-13) ANTENNA MOUNTS

Sioux chieftains whose choppers have the AN/ARA-31 antennas for their AN/ARC-44 radio equipment should check the antenna mounts (FSN 5821-649-8356) real carefully each preflight.





It seems there's some tendency for these supports to crack where the sheet metal mounting flange is welded to the cross tube. The cracks might be on either side, port or starboard, and can generally be found by looking for a break in the enamel surface. The crack may be either in the flange or in the cross tube—more often in the tube. But like any weldment, it may form at the edge of the weld fillet.

Naturally, if you encounter this problem, you forward a UER immijit.

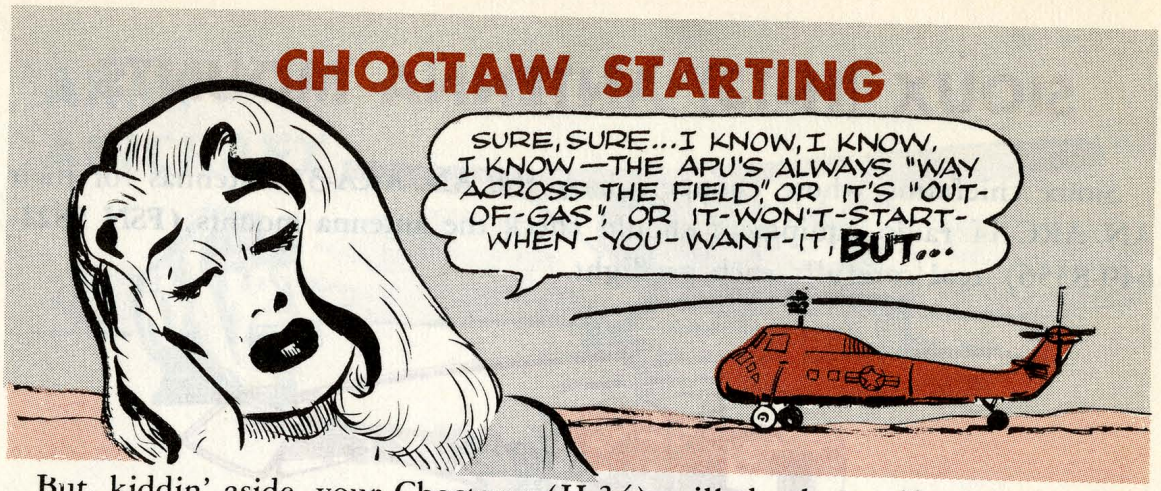
HOSE IN THE HOLE?

Too many people have been carelessly shoving the battery carrier back into their Beaver (L-20) without watching to be sure the drain hose goes into the rubber cup.

Which, of course means that any electrolyte that overflows gets loose inside the battery compartment instead of running down the drain and leaving the aircraft.

All it takes is a finger to guide the hose into the cup when you slide the battery into place.

And remember—like paragraph 7-23, page 241 of TM 1-1L-20A-2 (24 Nov 58) says—you fill the cells of this battery to 3/16 inch above the plates—and the placard on the battery door should say so.



But, kiddin' aside, your Choctaws (H-34) will thank you if you go get the juicer before you try to start 'em, particularly in cold weather.

First of all, there's always the big question, is your battery up enough to start your engine at all? And even if it is, you are not doing your fuel boost pump any favor when you require it to pump gas on the low voltage left in your system when the starter is strainin' to turn your engine.

It sounds silly, but an electric motor will overheat faster if you run it on low voltage than it will if you run it on high. Because as the armature spins it acts to some extent like a generator, and produces a voltage in the wires that bucks the operating current. This is called counter electromotive force, and is figured in when the motor is designed. But if you run this motor on low voltage, it turns slowly, the counter EMF does not build up, and too much current passes through your armature coils which get sorta hot. (You know how the lights dim when a motor starts—and if the voltage is too low, so it never gets up to speed, it goes right on drawin' heavy current.)

OK, so fuel boost pumps have been known to give up under this treatment.

Another thing: Don't be too hasty in engaging your clutch, particularly on the early ships with electric pumps. Run your engine until it is well warmed up first. Because cold oil is rough to pump, sometimes it overloads the pump and the breaker blows. Other times you may have the pump cutting in and out, pumping oil one minute and sucking air the next. Which also overheats it, and can wreck it.

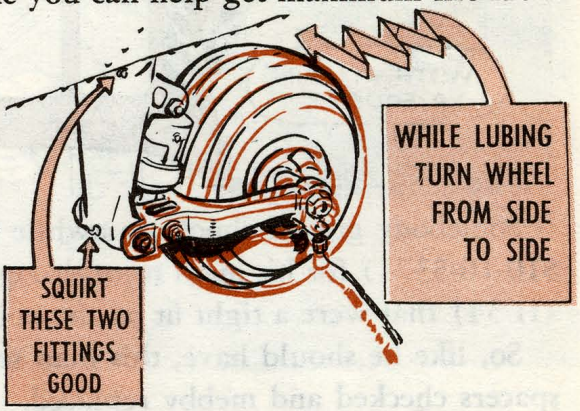
So, you'll actually be reducing your maintenance work, as well as improving your safety factor, if you'll take the trouble to get the APU to start your aircraft, and then warm your engine carefully before you engage your clutch. Keep the rotor brake off and the engine RPM below 1400. Then you won't overheat the clutch.

MOJAVE (H-37) TAIL WHEEL LUBING

There's been some complaint about the tail wheels on some Mojave (H-37's) not getting all the grease they could use. Also there have been reports that the tail wheel locks chip the bushings.

So, the manufacturer is working on the problem, and there may be a new bushing along soon. But in the meantime you can help get maximum life from the bushings you now have.

The trick is to give 'em a good grease job when you have the tail of the aircraft jacked up at your PE. Squirt the two grease fittings but good, while turning the tail wheel from side to side. This'll get the grease all the way around to the back side of the bushing, opposite the grease fittings.



468 OR 2028?

Dear Half-Mast,

On page 49 of PS 77 you tell us to use a DA Form 468 (Unsatisfactory Equipment Report) to recommend changes to the —20P parts manuals for aircraft. How come? Why not DA Form 2028 (Recommended Changes to DA Technical Manual Parts Lists or Supply Manual 7, 8 or 9)?

Sgt F. M. T.

Dear Sgt F. M. T.,

Yeah, why not? At the time PS told you to use DA Form 468, that's what the Transportation people wanted you to use.

Now the latest word is that you use DA Form 2028 for recommending changes to the parts lists in the —20P, but you still use DA Form 468 if you are asking for a change to the Maintenance Allocation Chart portion of the manual. (That part which used to be the —18 handbook).

Half-Mast

STICKY SPACER?

Somebody got all shook up awhile back because he got some spacers (PN S10-10-5371) for his main rotor droop and anti-flap restrainers for his Choctaw (H-34) that were a tight fit on the bolts.

So, like he should have, this man sent in a UER on the problem, to have the spacers checked and mebby replaced.

OK, so now the word is out: The spacers are held to a minimum ID of 0.3745-in. The bolts are held to a maximum of 0.3742-in.

The difference of three ten thousandths (.0003) is plenty for clearance.

BUT, and here's where you come in—these tolerances are for the machined spacers **before** the electrofilmed graphite coating is applied. And this coating

was the villain of the piece. It had built up a bit unevenly inside the spacer. But the spacers went down over the bolts with a light hand pressure, and when they had been put on and taken off a few times, enough of the graphite had worked out to make a good smooth fit.

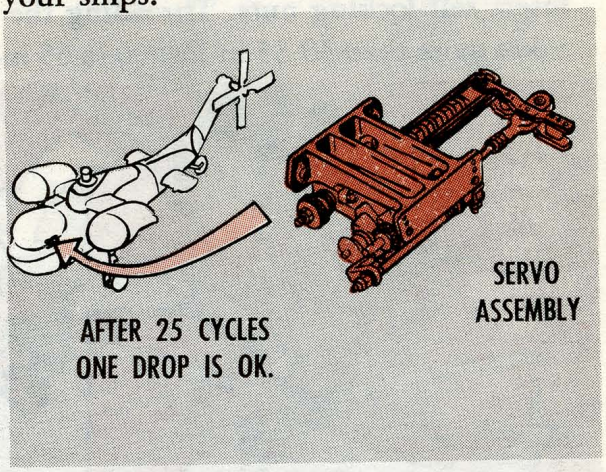
Ahhh—so! You needn't worry about this one, then, until you've tried a couple of times to work the spacer down over the bolt—but by hand **only** please—because by hand pressure you can get any excess graphite out, but you won't do any harm if you should actually get a metal-to-metal undersize by some fluke. No harm will come to the bolt from working out soft graphite.

Just in passing, this same spacer is also found on your Chickasaw (H-19).

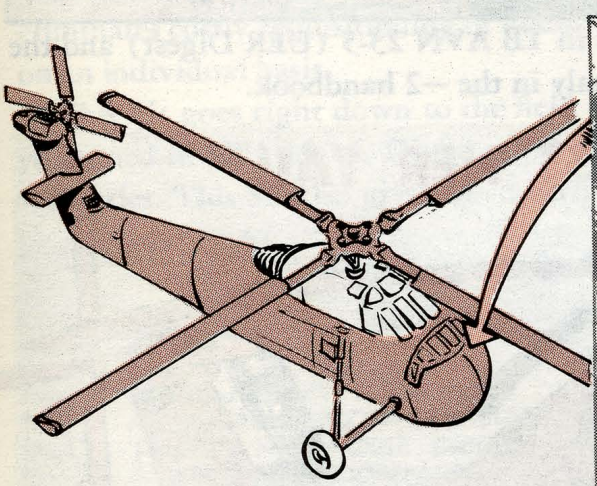
THROTTLE DRIP

You Mojave (H-37) men probably know by now that the —2 handbook doesn't give you any limits to the allowable leakage on the throttle servo unit assembly, S1565-61801-2 FSN 1650-631-3748 on your ships.

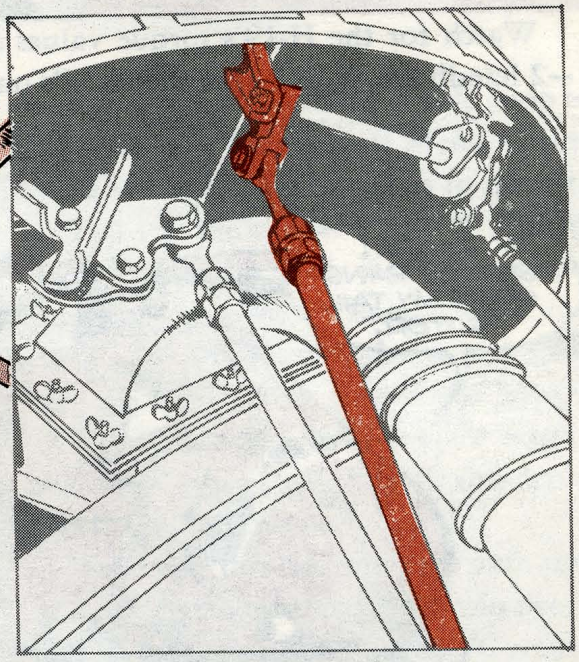
OK, so the tolerance is one drop in 25 cycles. BUT, there's a joker. Some leakage may take place when the ship's at rest, because there's a head of pressure left on the unit after engine shutdown. This you can disregard. Wipe the unit clean and dry and then cycle it 25 times, looking for leakage. If you only get one drop, you're OK. Don't go changin' units until you've made the cycle test—static leakage doesn't count.



CHOCTAW BULKHEAD BUSTED?



THE KIT, FSN 1560-M23-0934 WILL HELP STIFFEN THROTTLE INSTALLATION



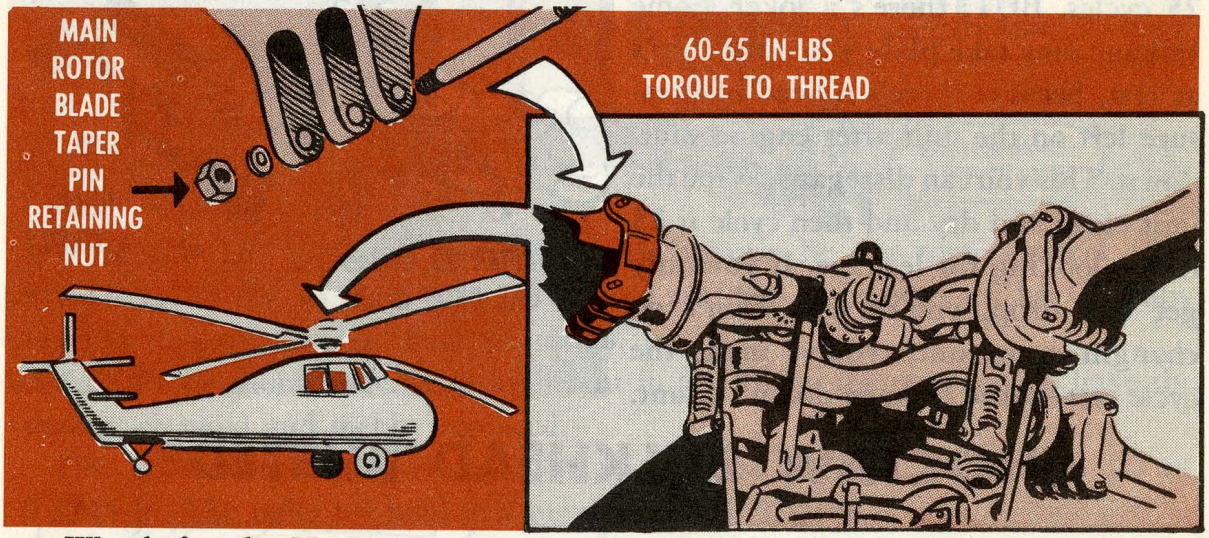
You Choctaw (H-34) chieftains been having trouble with the lightweight throttle installation on your fuselage canted bulkhead, round station 82.5?

Not surprised, not surprised at all: Be lookin' for TM 1-1H-34A-1001 and check with your field maintenance detachment. They'll get a kit, FSN 1560-M23-0943 from the factory, and install it for you to stiffen things up.

Don't let that odd looking FSN throw your field maintenance people for a loss . . . it's an interim number that's used on onetime shots such as this kit.

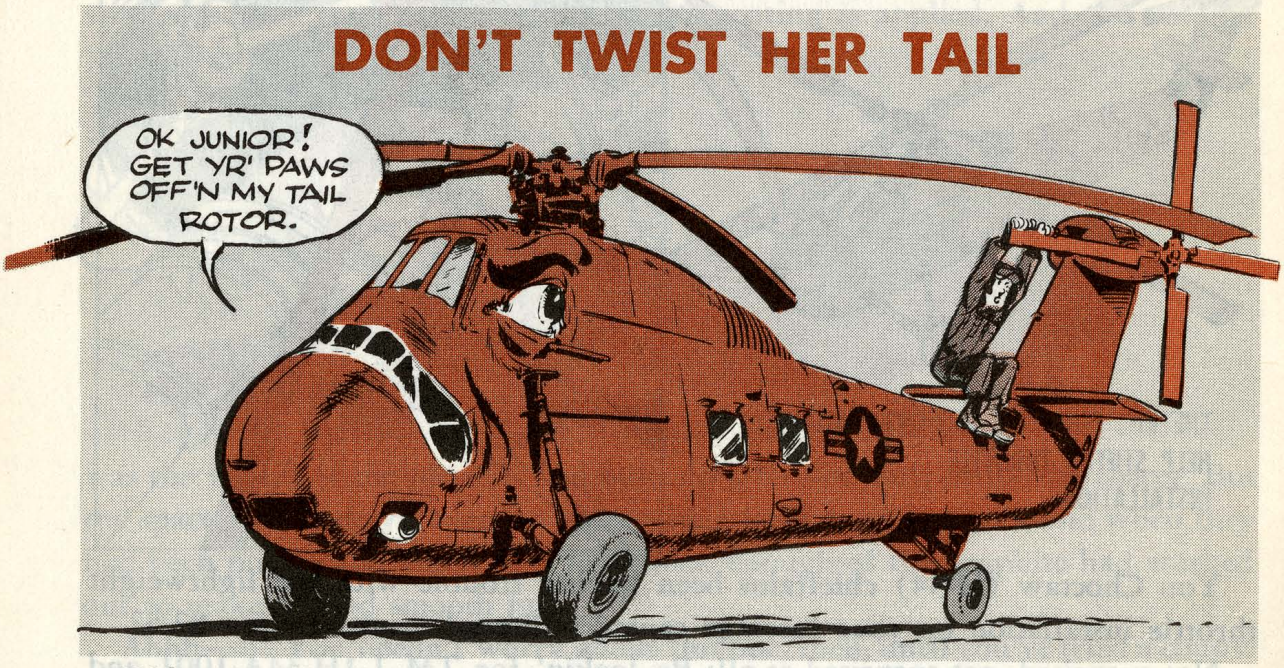
NEW TORQUE VALUE

The torque value for main rotor blade taper pin retaining nuts on both your Chickasaws (H-19's) and Choctaws (H-34's) has been raised for the new nylon insert self-locking nuts. Threading the nylon collar over the taper pin threads takes more than 30-35 in-lbs; 60 to 65 in-lbs will do the job.



Watch for the H-19's torque values in TB AVN 23-5 (UER Digest) and the —2 handbook. You'll spot the H-34's only in the —2 handbook.

DON'T TWIST HER TAIL



Did you ever see someone so doggoned lazy as to try to rotate the main rotor of a helicopter by turning the tail rotor?

Sure, it works, and nothing falls off the aircraft right away, either. But believe it, putting a reverse load on the tail rotor drive system is not at all good for it. This goes double in spades for Choctaws (H-34).

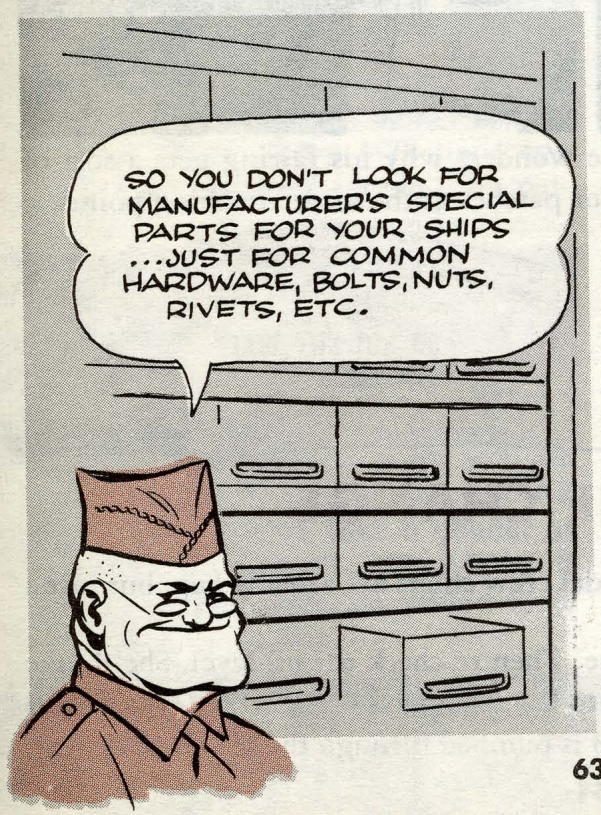
NEW HARDWARE KIT COMIN'

Transportation is bringing out a new aircraft common hardware kit, FSN 1560-600-5617, that carries darn near 500 items of common aircraft hardware. It's all done up in drawers and shelving inside one of the new steel shipping containers. One number not only gets the parts, it also gets the parts room. The shipping container can be manhandled around by truck, crane, forklift, bulldozer or even a gang of men. It weighs a ton-and-a-half, and everything comes together and stays together until used.

This is also handy for requisitioning, because the kit is drawn once, and then periodically a batch of the items can be requisitioned as replacements. This eliminates costly requisitioning of items on an individual basis.

SB 1-15-14 GIVES THE WHOLE POOP ABOUT THIS KIT

This kit goes right down to the field maintenance level, and the whole poop is contained in SB 1-15-14, Distribution of Harware Kit for Aircraft Maintenance Activities. This SB also gives the description and FSN of all the parts in the kit.



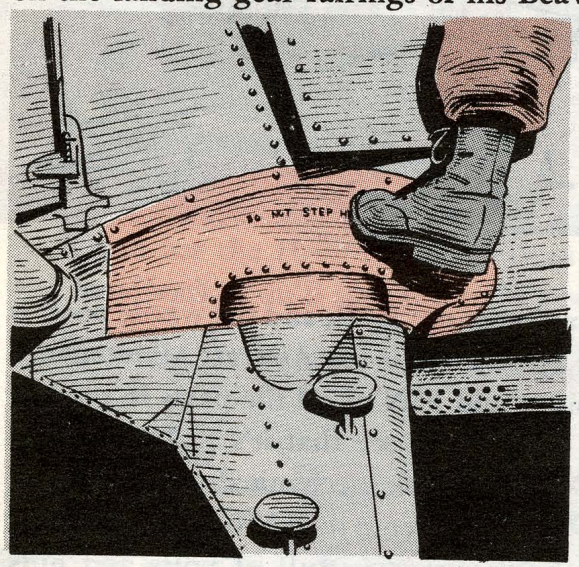
You can see that it's real helpful to you as a unit mechanic if you know you can hop over to the FM hangar and come back with a fistfull of bolts and nuts when you need 'em. And if you have a Field Maintenance Detachment working right with you, they'll also have quick access to this kit.

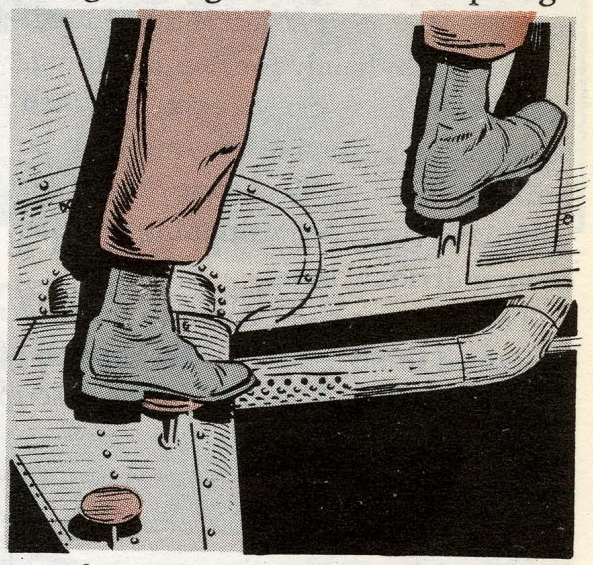
However, this kit is a new lash-up, and may not have everything you need, and things you never need. So TC wants to hear about it. Have a yarn with the FM supply people and you'ns can cook up a DA Form 468 (UER) telling what changes you think would make the kit more useful. Always remembering that it is intended to serve all aircraft across the board.

FAIR GO ON THE FAIRINGS

You've heard of people with all their brains in their feet.

Now comes the man with not **enough** brains in the feet. So he plonks 'em firmly on the landing gear fairings of his Beaver—right along-side the "No Step" sign





instead of standing on the step. Then he wonders why his fairing gets a sort of lace-curtain effect, with patches on top of patches at the after attaching points.

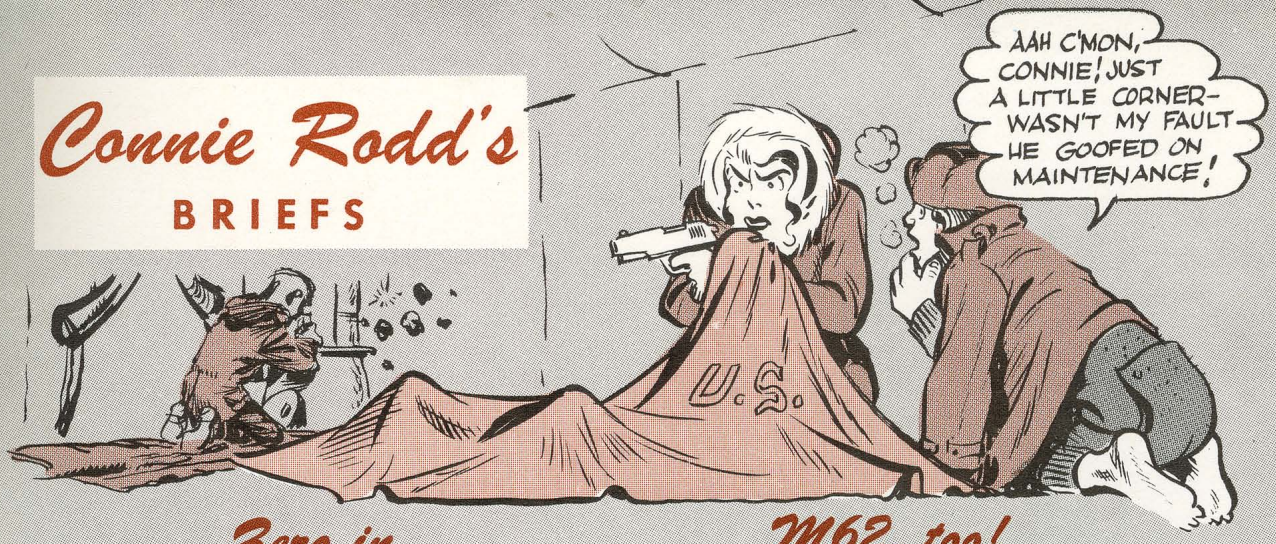
For once and for all, that "No Step" sign means that you keep your big hooves **off.** That part of the aircraft is **not stressed** to hold you or it wouldn't have the sign on it.

SIOUX OIL CHANGE

I'm sure all you Sioux (H-13) H model crew chiefs are already hep, but just a reminder anyhow.

After oil change, run up your engine. Then re-check the oil level. She'll take about three quarts more to bring her up to level. Somehow, the whole system will drain, but it won't fully fill until the oil is pumped through the scavenge system.

Connie Rodd's BRIEFS



Zero in

Somebody's been throwing type around again. Step 22 on page 122 of TM 9-1430-251-12 mentions setting up things for a 20 K yard range Nike-Hercules computer check. Not so. It should read 200 K yard range.

Put it back

You notice that Change 1 (14 Jan 59) to TOE 44-547T deletes the Nike-Hercules main body hoisting beam? That was a slip. The hoisting beam belongs in the TOE.

Don't limit your vision

You M48A2 tankers don't want to limit the range of the M28 periscope on the commander's cupola...by putting the periscope cover guard on backwards. The kee-rect way is with the slot running to the front—like it shows you in Fig. 18, page 44 of TM 9-7022 (Mar 58).

Range finder roundup

Want something to help you with the M13A1 range finder in your M48A2 medium tank? Well, take a gander at Change 2 (11 Mar 59) to TM 9-7022. It gives the latest poop on added tools and maintenance tips.

M62, too!

Having trouble with clutch adjustment and slippage on your M62 5-ton wreckers? Then go back to the tail end of para 202 in TM 9-8028 (June 55). Forget about that "M246 only" business there and make use of para 270 to get your roto chamber adjustment combined with your linkage adjustment... like Change 2 (26 Jul 57) says.

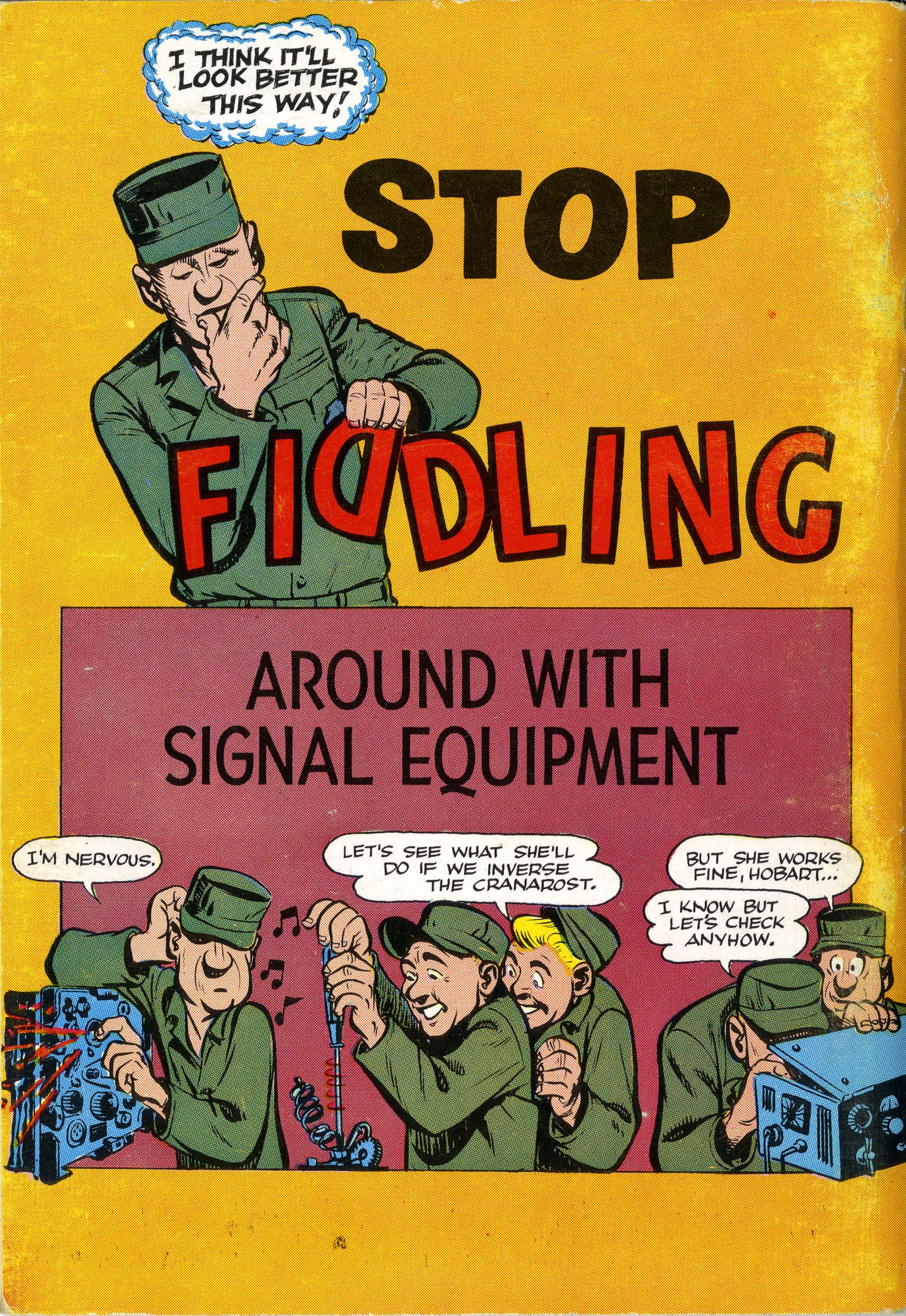
Number, please?

Pass along this info to your support unit if you have a Nike-Hercules launcher with a serial number between 1601 and 1663. Tell 'em your launcher also gets modified according to MWO Y75-W17. The MWO was aimed at launchers with serial numbers from 1021 to 1600, but is being changed to include numbers through 1663.

Pinch-hitters for tet

When you gotta go to bat against dirt, grease and stuff on electrical and electronic equipment like wiring, insulation, contact points, etc., steer clear of carbon tetrachloride. TB 9-268 (8 May 59) gives you the dope on a coupla approved substitutes. Grab a copy right away.

Would You Stake Your Life on the Condition of Your Equipment?


I THINK IT'LL LOOK BETTER THIS WAY!
STOP
FIDDLING
AROUND WITH SIGNAL EQUIPMENT
I'M NERVOUS.
LET'S SEE WHAT SHE'LL DO IF WE INVERSE THE CRANAROST.
BUT SHE WORKS FINE, HOBART...
I KNOW BUT LET'S CHECK ANYHOW.